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16. Abstract <p>Satellite multispectral imagery can be used in regional planning for depicting general developed land patterns, wooded areas and newly constructed highways by using visual photo interpretation methods. Other characteristics, such as residential and nonresidential development, street patterns, development density and some vacant land components cannot be adequately detected using these standard methods.</p> <p>Use of computer compatible tapes is a promising alternative to visual methods. However, problems associated with accurate geographic location and better delineation among land uses still need to be solved.</p> <p>(E76-10168) INVESTIGATION OF SATELLITE IMAGERY FOR REGIONAL PLANNING Final Report, 1972 - 1974 (Tri-State Regional Planning Commission) 72 p HC \$4.50</p>		13. Type of Report and Period Covered Final Type III 1972-1974
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Investigation of Satellite Imagery
for
Regional Planning

William Harting

NAS 5-21738

to

Tri-State Regional Planning Commission

August 1975

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INTRODUCTION

The Tri-State Regional Planning Commission is the official planning agency of the Tri-State Region, which includes 12 counties in New York, 9 counties in New Jersey and 6 planning regions in Connecticut. It also serves as a central supporting resources for subregional and local planning.

The Commission has prepared a number of regional plans, highway, mass transit, open space and development guides. The basis for these plans was extensive inventories taken in 1963. The land use inventory required a field survey involving 900 people, took six months to acquire the data and over a year to computerize it. These inventories must constantly be renewed or updated. This requires substantial amounts of manual labor (including inherent human error), is time consuming and very costly.

The objective of this project was to ascertain the feasibility of using satellite imagery to detect and monitor 5 specific land uses-vacant land, developed land, residential development, non-residential development and streets.

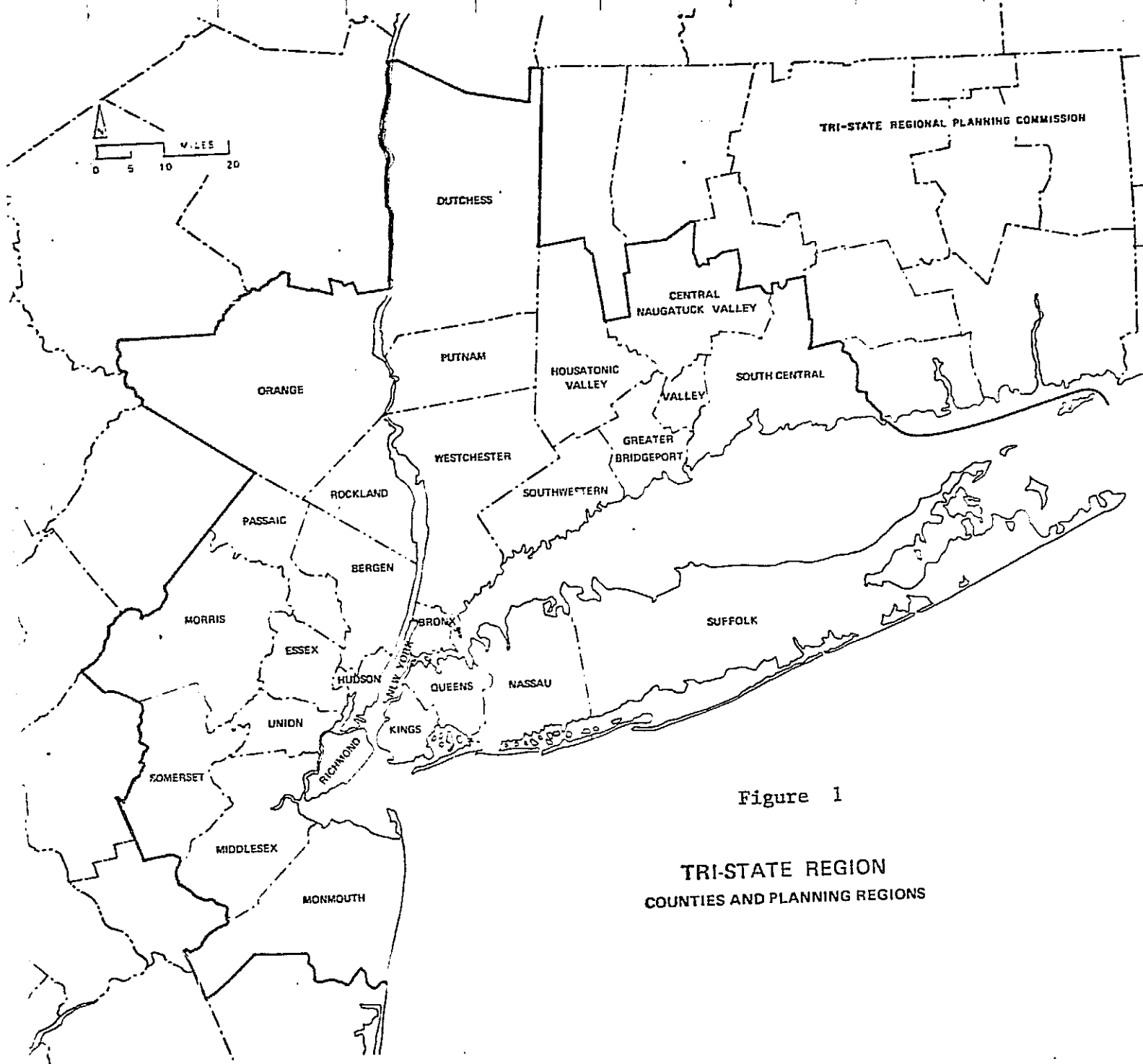


Figure 1

TRI-STATE REGION
COUNTIES AND PLANNING REGIONS

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PROCEDURE

Two methods were originally proposed to achieve the objective: visual photo interpretation and the use of automated scanning devices. In actual practice visual interpretation was used. However, in the second method instead of using scanning devices to acquire digital data, computer compatible tapes were used. This will be explained further in the section dealing with the automated approach.

DATA REVIEW

We received 70 mm negatives of multispectral scanner images of all usable passes from July 28, 1972 thru April 3, 1974. They were reviewed, cataloged and rated as to usability. (See Appendix, Exhibit 1.)

It required 6 scenes on 3 consecutive days to fully cover 8000 square miles of the Tri-State Region. Of the 35 cycles between 1972 and 1974, images of all six scenes were received only 4 times and in no case were all images usable. The reason for this is that the entire region was not totally cloud-free on 3 consecutive days.

It should be noted that an average of 8 usable images for each scene were obtained over the 22-month time period. Each scene had at least one usable image for each season of the year. Because of variations in the cloud cover and the 18

day cycle, the satellite should not be the sole source for annual monitoring of a large region at a specific time period.

Almost all of the negatives and transparencies were of excellent quality. Enlargements, of approximately 12 diameters, to a scale of 1:250,000 retained clearly defined areas of 6 acres. This was particularly true of surface water bodies. Certain linear features were discernible, such as major streets, highways, railroads and bridges. They were most visible in the rural areas, but tended to blend into the background in urban areas. Major roads which were newly constructed or under construction were clearly discernible. Additions to the highway network could be monitored with periodic overflights. Supplemental information would be needed to record the "open to traffic" condition.

Some difficulty was experienced when preparing enlargements for adjacent scenes acquired on different orbits which were within 1 or 2 days. It was difficult to obtain the same grey scale value for the same area on the ground. The differences were more pronounced when false color prints were made. Sophisticated processing equipment could aid in resolving this problem but its use was beyond the scope of this project. A large difference was noted-and expected-for images taken at different seasons of the year.

Each scene was investigated separately. The tonal differences were assumed to be relative, so correlations could be made from one scene to the other.

VISUAL PHOTO INTERPRETATION

Two scales were used in the visual interpretation - 1:1,000,000 and 1:250,000. Both black and white and composite color prints were used for each scale.

A. Black/white images at 1:1,000,000

A report entitled "Visual Interpretation of Black/White Images at 1:1,000,000" was submitted as a progress report in September 1973. It is included as Exhibit 2 in the appendix of this report. The general conclusion of the report was that the images at a scale of 1:1,000,000 were not suitable for delineating the specified land use types.

B. Composite Color images at 1:1,000,000

A subsequent color composite print (E-1079 - 15131) consisting of MSS band 4, 5 & 7 was obtained. The false color rendition accentuates the negatation (red) and the developed land (cyan). Vegetation meant the land was not developed-or developed at a very low density. The absence of vegetation meant the land was developed, it was readily observed that heavily wooded areas, such as parks, were bright red and that densely developed areas, such as Manhattan were dark cyan. The degree of development was classified into four categories:

- 1 - sparsely developed
- 2 - moderately developed
- 3 - well developed
- 4 - intensely developed

A square mile grid was then prepared at the 1:1,000,000 scale on a clear base. The grid was overlayed on the color composite and oriented according to its correct geographical position. Color codes and numerical values were assigned to the development categories-1 (white) sparsely developed; 2 (yellow) moderately developed; 3 (brown) well developed; and 4 (blue) intensely developed.

The test area was examined and the square mile assigned the appropriate color. Information containing the x-y coordinate identifier of the square mile and the development number was keypunched and put on computer tape. A tabulation was prepared that listed the square miles by the observed development categories. They were compared to the percent developed land value of Tri-State's Land Use Inventory by a computer matching program. (Appendix Exhibit 3) The following chart (Figure 2) summarizes the findings.

Figure 2

DEVELOPED LAND

LAND USE INVENTORY (% DEVELOPED) vs OBSERVED DEVELOPMENT

by

Square Mile Grid Cell

Observed Development

Tri State Land Use Inventory

% Developed

	Sparsely Developed	Moderately Developed	Well Developed	Intensely Developed	
Sparsely Developed	44	2	0	0	46
Moderately Developed	63	12	4	0	79
Well Developed	75	32	26	5	138
Intensely Developed	97	109	106	83	395
TOTAL	279	155	136	88	658

The results were not particularly encouraging. It was expected that the majority of the sparsely developed observations would be in the 0-25% developed land columns. However, only 15.7% compared favorably while 84.3% compared unfavorably. The observed development in the moderate and well developed categories did not compare favorably with the ground truth - 7.7% and 19.1%, respectively. The intensely developed observations compared quite favorably with 94.3% of the observations in the expected category.

It is therefore concluded that the method of defining developed land by color composite at the 1:1,000,000 scale is not suitable for regional planning.

C. Floor Space Correlation

In the course of comparing the ground truth to the developed land observations it appeared that a greater correlation could be obtained by using floor space instead of land values. A tabulation comparing the observed development to the total floor space was prepared (Appendix Exhibit 4).

The following table (Figure 3) compares the observed development vs total floor areas.

Figure 3

DEVELOPED LAND

TOTAL FLOOR SPACE vs OBSERVED DEVELOPMENT

by

Square Mile Grid Cell

Observed Development

Tri-State Land Use Inventory

Total Floor Space

(millions of square ft.)

	Sparsely Developed	Moderately Developed	Well Developed	Intensely Developed	
Sparsely Developed	202	29	12	4	247
Moderately Developed	68	105	38	2	213
Well Developed	9	21	66	18	114
Intensely Developed	0	0	20	64	84
TOTAL	279	155	136	88	658

There is a very favorable comparison in all categories between the observed development and the floor space categories. It appears that the satellite sensors are capturing man-made features, such as buildings, in a unique manner. If this preliminary finding can be verified by further investigation it should prove to be an invaluable aid to planners. Unfortunately, the results of this finding came too late to carry out a detailed investigation.

D - Black/White Image at 1:250,000 scale

Enlargements of selected scenes were made of all (4) bands to a scale of 1:250,000.

It was determined that Band 4 did not provide sufficient grey tone contrast to distinguish any of the five specified land uses - vacant land, developed land, residential land, non-residential land and streets. Since the land uses blended into one another, it was impossible to outline and measure any one of them.

Vacant Land

Band 5 was selected as being most suitable for defining "vacant" land this image best portrayed most of the appropriate characteristics. "Vacant" land for regional planning purposes at Tri-State, is defined as those areas which are susceptible for development. Three primary components are included: wooded land, agricultural land, and empty lots

within partially developed blocks in urban-suburban areas.

The three components were investigated separately.

Since the wooded areas make up the greatest portion of the "vacant" land in the Tri-State Region, these areas were investigated first. In making the enlargements from 70 mm negatives to the 1:250,000 scale, attempts were made to enhance the darker portions which represent wooded lands. Areas with heavy concentrations of woods would be considered undeveloped and would fall within the Tri-State definition of "vacant". Public parks, forests and water shed lands would show up as heavy concentrations of woods but were not considered "vacant". Since the boundaries of these areas were known, they were removed from consideration. This was done by preparing an overlay of the park, forest and watershed boundaries at the 1:250,000 scale and superimposing the overlay on the ERTS image. The wooded areas within the boundaries were then disregarded. A Tri-State x-y square mile grid was positioned on the photos. The amount of "wooded" land within each square mile was measured using a templet.

Next, the agricultural land component was evaluated. Areas in which the farms had distinct, regular shapes and had similar crop cover, such as the potato farms along the north shore of Long Island, were fairly easy to identify and measure.

Areas in which the farms were irregularly shaped because of land contour or low density residential development could not be easily separated for outlining and measurement.

The third component of vacant land is the empty parcels in suburban and, to a lesser degree, urban communities. Low altitude photography is capable of providing suitable imagery to define this land use. However, the poor resolution plus the limited range of spectral radiance on any band does not permit this category to be detected adequately. The parcels under consideration were random and small and, therefore, would blend in with the surrounding characteristics.

In short, we found that only one component (wooded) of "vacant" land could be adequately detected to be incorporated into the inventory file and used in the planning process. Other methods would have to be employed to detect the "agricultural" and "empty lot" components.

Developed Land

Developed land, for regional planning, is defined for residential and nonresidential use as well as for streets and highways. It is necessary to know the stage of development to forecast where future growth may occur. Four categories have been specified (1) sparsely developed, (2) moderately developed, (3) well developed and (4) intensely developed.

Two bands, MSS-5 and MSS-7, were investigated. It was found that in Mss-5 (July 24, 1973 1366-15065) developed land could be generally distinguished from undeveloped land. The developed area was outlined and compared to the land use inventory file. There was a favorable comparison at the "total developed" level. However, the different development categories are not discernible on this band.

"Intensely developed" land was readily observed on Mss-7 (Aug.30, 1973). An overlay could be prepared and matched against the "total developed" map. This would still leave three categories undefined.

Our conclusion is that using visual interpretation involving black/white images of several bands is not suitable for delineating needed categories developed land. It should be noted that other methods are available which show great promise of achieving this objective.

Residential & Nonresidential Development

The features which distinguish residential and non-residential use from other types of development, such as street patterns, roof type and building size are not discernible by visual observation. The resolution of this imagery is not sharp enough to distinguish the different characteristics.

Hopefully, digital data may provide the necessary components to separate the two land uses. Favorable Floor space correlation might be the answer. There are indications that different size structures may have different spectral signatures. No conclusions can be drawn at this time, but it appears to be a promising area for future investigation.

Streets

The ability to inventory and monitor streets and highways is an important element in the regional planning process. For planning purposes three types are needed (1) limited access highways (2) arterial routes and (3) local streets.

Limited access highways can be identified most of the time in rural noncultivated areas, In some cultivated areas there is little, if any, tonal difference between the highway and the surrounding area. If the highway has been recently

constructed, however, there is a noticeable difference, not only between the land and the highway, but between the old and new portions of the highway itself. This is significant since it would provide the means to monitor the construction of additional limited access and major arterial routes.

Streets are not detectable in urban, well developed or intensely developed areas, except for new, large additions or reconstruction. This type of imagery is not suitable for inventory purposes but has the potential for monitoring.

E. Composite Color Images

False color prints at three scales were investigated 1:1,000,00 ; 1:333,000 and 1:250,000. The composite prints were made from bands 4, 5 and 7.

The false color accentuates the vegetation and hence the undeveloped areas. It also highlights intensely developed areas by the absence of vegetation. Theoretically, it should be possible to record varying degrees of development by associating a particular shade of a given color to a degree of development. In practice it was found that the two extremes could be delineated. Because of subtle changes in color, considerable variations in the recorded data were found especially when two or more persons were recording their observations. Several other factors limit the usefulness of this

particular type of product.

First, the color was not consistent from one frame to another. Therefore, it was not possible to associate a particular color to a specific degree of development.

Second, the false color prints are prepared elsewhere and there is little or no influence over the process. This means that variations in the composition of the print cannot be made. The acquisition of equipment to accomplish this flexibility is prohibitive.

Third, a process has been developed which can enhance certain characteristics of ERTS imagery by blending different shades of several colors to produce the desired results. (1) Evaluation of ERTS-A Imagery for Land Use/Resources Inventory Information (NASA No. 358) E.Hardy, J. Skaley, E. Phillips

AUTOMATIC METHOD

At the beginning of the project it was anticipated that available electronic scanning devices would be used to reduce satellite imagery to digital form. Once in this form the investigation would seek a unique "signature" for the specified land uses. It was expected that the digital data could be geographically associated with the Tri-State X-Y grid coordinate system.

In the course of the investigation it was decided that computer compatible tapes would provide the same if not better data. Tapes for two scenes (1076-15074 and 1456-15052) were requested and received. They were bulk type, 9 track of all four MSS bands. The tapes were reformatted to the IBM 370/125 configuration. A computer mapping program, developed at Tri-State, was applied to a test area around Manhattan, New York.

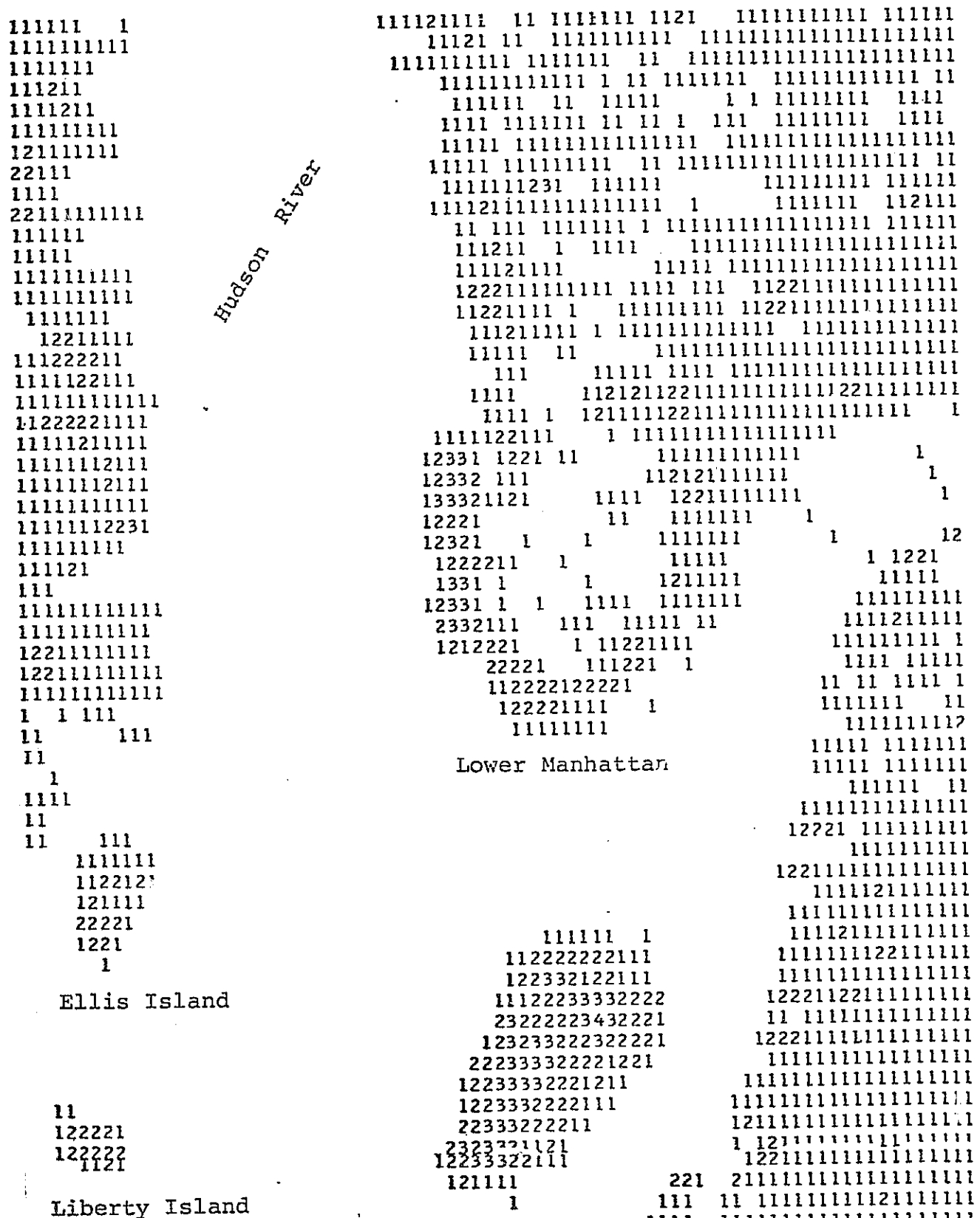
The first step was to separate land from water. Using MSS band 6 all video data readings with a value of 9 or less were suppressed. All other values were computer mapped as shown in Figure 4. The separation was quite distinct with the exception of downtown and midtown Manhattan. These places are two of the most intensely developed areas in the world. They have video data values similar to water but the reason for this is not clear.

The areas with values between 10 and 19 indicate well developed and intensely developed land. Areas with values between 20 and 29 are found to be moderately developed and well developed. Some with limited access highways have values in the 20's as do rock cliffs with steep elevations of 100 feet or more. This presents problems when delineating areas by computer. Hopefully, when used in combination with other bands, it will be possible to separate the limited

(MSS - 6)

(water values suppressed)

Figure 4



access highways and the rock cliffs from the developed land.

The higher video values of 30 and up are representative of open, wooded and sparsely developed land. These findings are encouraging and it is expected that when used in combination with other bands better delineations between developed and open land will be possible. The development of a computerized method of subtracting parks, forests and watershed lands to obtain "vacant" land would be highly desirable.

An attempt was made to geographically locate the video data according to the Tri-State X-Y grid coordinate system. Since efforts so far have not been successful, it has not been possible to correlate the ERTS data with the Land Use Inventory file. Further work is necessary but cannot be accomplished within the existing time requirements.

In summary, it appears that the potential of acquiring and monitoring land use for regional planning purposes by using computer compatible tapes is very good. More work is needed to make the process operational.

APPENDIX

- Exhibit 1 - ERTS image catalog
- Exhibit 2 - Visual Interpretation of Black/White Images
at 1:1,000,000
- Exhibit 3 - Computer Printout of Observed vs Ground Truth
by Per Cent Developed
- Exhibit 4 - Computer Printout of Observed vs Ground Truth
by Total Floor Area

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Exhibit 1

Cycle Number	Scene Number	1972 Date	MSS NEGATIVES				MSS TRANSPARENCIES				DATE RECEIVED	
			4	5	6	7	4	5	6	7		
1	1	JUL 28	E	E	E	E					AUG 17 NEG-REV-3	PRINTS OF 3-RE 4-M
	2	JUL 28									NEG-REV-3	PRINTS 3-RE 4-MSS
	3											
	4											
	5											
	6											
2	1	AUG 15	014 P	044 P	075 P	106 P					AUG 25	
	2											
	3											
	4	AUG 16	017 G	063 G	109 G	135 G					SEP 13	PRINTS
	5											
	6											
3	1											
	2											
	3											
	4	SEPT 3	017 DECI	044 DECI	081 DECI	113 DECI	017 P	044 P	081 P	113 P		
	5											
	6											
4	1											
	2											
	3											
	4											
	5	SEPT 22	017 F	037 F	067 F	097 F	007 F	037 F	067 F	097 F	OCT 25	4
	6	SEPT 22	008 P	038 F	068 F	098 F	008 F	038 F	068 F	098 F	OCT 25	11

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ERTS - LOG

Exhibit 1

Cycle Number	Scene Number	1972 Date	MSS NEGATIVES				MSS TRANSPARENCIES				DATE RECEIVED		
			4	5	6	7	4	5	6	7			
5	1	OCT 8	014 E	041 E	068 E	095 E	014 F	041 E	068 E	095 E	NOV 8 OCT 8	TPM 12/11	4
	2	OCT 8	015 E	042 E	069 E	096 E	015 E	042 E	069 E	096 E	NOV 8 OCT 8	12/11	4
	3												
	4	OCT 9	006 G	032 G	058 G	084 G	006 G	032 G	058 G	084 G	OCT 9, 1972		4
	5	OCT 10	223 F	241 E	259 E	277 E	223 E	241 E	259 E	277 E	OCT 9, 1972		4
	6	OCT 10	224 E	242 E	260 E	278 E	224 E	242 E	260 E	278 E	OCT 9, 1972		4
6	1												
	2												
	3	OCT 27	202 E	219 E	236 E	253 E	202 E	219 E	236 E	253 E	OCT 27	NOV 20	4
	4	OCT 27	203 E	220 E	237 E	254 E	203 E	220 E	237 E	254 E	OCT 27	NOV 20	4
	5												47
	6												
7	1												
	2												
	3												
	4												
	5												
	6												
8	1												
	2												
	3	DEC 2					076 F	044 G	062 G				
	4	Dec 2					077 G	045 G	063 G				
	5	DEC 3					117 P	150 P	183 P				
	6	Dec 3					118 F	151 F	184 E				

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Exhibit 1

Cycle Number	Scene Number	Date 1972	MSS NEGATIVES				MSS TRANSPARENCIES			
			4	5	6	7	4	5	6	7
9	1	DEC 19								
	2	"								
	3	DEC 20								
	4	"								
	5	DEC 21								
	6	"								
10	1	JAN 6 1973					298 F	311 F	324 F	337 F
	2	"					299 P	312 P	325 P	338 P
	3	JAN 7					007 P	038 P	059 P	100 P
	4	JAN 7					008 P	039 P	070 P	101 P
	5	JAN 8					075 P	093 P	111 P	129 P
	6	"								
11	1	JAN 24					125 P	165 P	255 P	295 P
	2	"					126 P	166 P	206 P	206 P
	3	JAN 25					106 P	145 P	184 P	223 P
	4	"					107 F	146 F	185 F	224 F
	5	JAN 26					008 F	021 F	042 F	064 F
	6	"					009 F	022 F	043 F	065 F
12	1	FEB 11								
	2	"								
	3	FEB 12					016 G	042 G	067 G	092 G
	4	"		043			017 G	043 G	068 G	093 G
	5	FEB 13	114	136	158	180	114 E	136 E	158 E	180 E
	6	"	115	137	159	181	115 E	137 E	159 E	181 E

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Exhibit 1

CYCLE NUMBER	SCENE NUMBER	1973 DATE	MSS NEGATIVES				MSS TRANSPARENCIES			
			4	5	6	7	4	5	6	7
13	1	MAR 1	098	128	158	188	098 P	128 P	158 P	188 P
	2	MAR 1	099	129	159	189	099 G	129 G	159 G	189 G
	3	MAR 2	016	-	094		0016 P		0094 P	
	4	"	017	056	095	124	0017 F	?	0095 F	134 F
	5									
	6									
14	1	MAR 19	008	043	078	113	008 P	043 P	078 P	113 P
	2	MAR 19	009	044	079	114	009 P	044 P	079 P	114 P
	3	MAR 20	007	033	064	095	007 P	033 P	064 P	095 P
	4	MAR 20	008	034	065	096	008 P	034 P	065 P	096 P
	5	MAR 21	015	050	085	120	015 P	050 P	085 P	120 P
	6	"	016	051	086	121	016 P	051 P	086 P	121 P
15	1	April 6	008	029	050	071	008 P	029 P	050 P	071 P
	2	6	009	030	051	072	009 E	030 E	051 E	072 E
	3	7	008	042	076	110	008 G	042 G	076 G	110 G
	4	7	009	043	077	111	009 E	043 E	077 E	111 E
	5	8								
	6	8								
16	1	APRIL 24	007	034	063	091	007 E	034 E	063 E	091 E
	2	24	008	035	064	092	008 E	035 E	064 E	092 E
	3	25	009	043	077	111	009 P	043 P	077 P	111 P
	4	25								
	5	26								
	6	26								

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Exhibit 1

CYCLE NUMBER	SCENE NUMBER	1973 DATE	MSS NEGATIVES				MSS TRANSPARENCIES				
			4	5	6	7	4	5	6	7	
17	1	MAY 12	107	121	141	158	107 P	124 P	141 P	158 P	Cloud cover
	2		108	125	142	159	108 F	125 P	142 F	159 F	Problems over clear
	3	MAY 13	007	042	077	112	007 P	042 P	077 P	112 P	many clouds
	4		008	043	078	113	008 P	043	078 P	113 P	" "
	5	MAY 14	006	035	064	093	006 P	035 P	064 P	093 P	
	6	"	007	036	065	094	007 P	036 P	065 P	094 P	
18	1	MAY 30	012	049	086	123	012 G	049 G	086 G	123 G	
	2	"	013	050	087	124	013 G	050 G	087 G	124 G	
	3	MAY 31									
	4	"	007	037	067	097	007 F	037 F	067 F	097 F	Accidental clouds
	5	JUNE 1	008	040	072	104	008 P	040 P	072 P	104 P	
	6	"	009	041	073	105	009 F	041 F	073 F	105 F	
19	1	JUNE 17	015	040	065	090	015	040	065	090	Pro - clouds
	2	"	016	041	066	091	016	041	066	091	Pro - clouds
	3	JUNE 18									
	4	"									
	5	JUNE 19									
	6	"									
20	1	JULY 5									
	2	5									
	3	JULY 6	010	046	082	118	010	046	082	118	Pro - clouds
	4	6	011	047	083	119	011	047	083	119	Good
	5	JULY 7	004	028	052	076	004	028	052	076	Good
	6	7	005	029	053	077	005	029	053	077	"
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CYCLES NUMBER	SCENE NUMBER	DATE 1973	MSS NEGATIVES				MSS TRANSPARENCIES				
			4	5	6	7	4	5	6	7	
21	1	JULY 23	008	041	073	105	008	041	073	105	apartment - view
	2		009	042	074	106	009	042	074	106	apartment - view - from other side
	3	JULY 24	009	042	085	105	009	042	085	105	apartment - view - from other side
	4		009	042	085	105	010	042	085	105	
	5	JULY 25									
	6										
22	1	AUG 10		039	063	067		039	063	067	
	2			040	064	088		040	064	088	
	3	AUG 11									
	4										
	5	AUG 12									
	6			035	063	071		035	063	071	
23	1	AUG 28									ORIGINAL PAGE IS OF POOR QUALITY
	2										
	3	AUG 29	126	166	206	246	126	166	206	246	
	4		127	167	207	247	127	167	207	247	
	5	AUG 30	078	109	140	171	078	109	140	171	
	6		079	110	141	172	079	110	141	172	
24	1	SEPT 15									
	2										
	3	SEPT 16	111	139	167	195	111	139	167	195	fair light - cloudy, over NY harbor - some smoke &
	4		112	140	168	196	112	140	168	196	Excellent
	5	SEPT 17	176	207	239	271	176	207	239	271	scattered clouds
	6		177	208	240	272	177	208	240	272	NYC - clear Business district
						AG					

ERTS - LOG

Exhibit 1

ROLL NUMBER	SCENE NUMBER	DATE 1973	MSS NEGATIVES				MSS TRANSPARENCIES				
			4	5	6	7	4	5	6	7	
25	1	OCT 3									
	2	" 3									
	3	OCT 4	125	210	245	280					Faint - scattered clouds
	4	" 4	176	211	246	281					Good - few clouds over N.J.
	5	OCT 5									
	6	" 5									
26	1	OCT 21	108	138	168	198	108	138	168	198	Good - scattered clouds
	2	21	109	139	169	199	109	139	169	199	Good - scattered clouds
	3	OCT 22	007	037	067	097	007	037	067	097	Clear EXCELLENT
	4	22	008	038	068	098	008	038	068	098	Clear EXCELLENT
	5	OCT 23	127	159	191	223	127	159	191	223	Good - Fair
	6	23	128	160	192	224	128	160	192	224	Good - Fair
27	1	NOV 8									
	2	8									
	3	NOV 9	161	171	201	221	161	171	201	221	Good - Fair
	4	9									
	5	NOV 10	125	162	199	236		162	199	236	Good - Fair
	6	10	126	163	200	237	126	163	200	237	Good - Fair
28	1	NOV 26	058	075	092	109	058	075	092	109	
	2	26									
	3	NOV 27									
	4	27									
	5	NOV 28									
	6	28									

ORIGINAL PAGE IS
OF POOR QUALITY

ERTS - LOG

Exhibit 1

CYCLE NUMBER	SCENE NUMBER	DATE 1973	MSS NEGATIVES				MSS TRANSPARENCIES				
			4	5	6	7	4	5	6	7	
29	1	DEC 14									
	2	14									
	3	DEC 15	067		073	106	007		073	106	POOR QUALITY
	4	15									
	5	DEC 16									
	6	16									
30	1	JAN 1 1974									
	2	1									
	3	JAN 2	211	212	273	304	211	242	272	304	POOR QUALITY
	4	2	212	243	274	305	212	243	274	305	EXCELLENT
	5	JAN 3									
	6	3									
31	1	JAN 19	075	106	137	168	075	106	137	168	POOR QUALITY
	2	19									
	3	JAN 20	201	225	249	273	201	225	249	273	EXCELLENT
	4	20									
	5	JAN 21									
	6	21									
32	1	FEB 6	187	230	273		187	230	273		EXCELLENT
	2	6	188	231	274		188	231	274		"
	3	FEB 7									
	4	7									
	5	FEB 8									
	6	8									

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ERTS - LOG

Exhibit 1

CYCLE NUMBER	SCENE NUMBER	1974 DATE	MSS NEGATIVES				MSS TRANSPARENCIES				
			4	5	6	7	4	5	6	7	
33	1	FEB 24	306	034	062	090	006	034	062	091	EXCELLENT
	2	24	017	035	063	091	007	035	063	091	EXCELLENT
	3	FEB 25									
	4	25									
	5	FEB 26	006	024	062	060	006	024	062	060	EXCELLENT
	6	26	007	025	063	061	007	025	063	061	EXCELLENT
34	1	MAR 14	81	317	355	389	81	317	353	389	EXCELLENT
	2	14	82	318	356	390	82	318	354	390	EXCELLENT
	3	MAR 15	423	443	463	483	423	443	463	483	EXCELLENT
	4	15	424	444	464	484	424	444	464	484	EXCELLENT
	5	MAR 16									
	6	16									
35	1	APR 1	008	040	072	104	008	040	072	104	POOR
	2	1	009	041	073	105	009	041	073	105	GOOD OVER AREA
	3	APR 2									
	4	2									
	5	APR 3	014	060	106	152	014	060	106	152	POOR
	6	3	061	107	153	015	061	107	153	TS and GOOD	
36	1	APR 19									
	2	19									
	3	APR 20									
	4	20									
	5	APR 21									
	6	21									

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INVESTIGATION OF SATELLITE IMAGERY FOR REGIONAL PLANNING

VISUAL INTERPRETATION
OF
BLACK/WHITE IMAGES
AT
1:1,000,000INTRODUCTION

This report is part of a series which will describe the results of investigations of ERTS imagery at various scales using color and black/white photos and incorporate both visual and electronic interpretation. This particular report describes the result of images of four MSS (Multispectral Scanner Subsystem) bands (4, 5, 6, 7), at a scale of 1:1,000,000, taken on August 16, October 8 and October 10, 1972. These images were used to obtain cloud-free prints of the study area.

It should be clearly understood that the land use definitions and the visual observations are specifically oriented toward regional planning use.

METHOD

The approach used was to 1) ascertain whether a unique "signature" could be observed or 2) to determine if an acceptable inference in lieu of a signature could be drawn. The 70 mm. negatives of each band were enlarged on a D type Omega enlarger. Each land use category was outlined on an overlay to the photo in various parts of the Region. The outlined area was compared to the land use data files maintained by the Tri-State Regional Planning Commission. Aerial photos at two scales (1:4800 and 1:24,000) were also used as reference.

CONCLUSIONS

The following general conclusions have been reached:

The black/white 1:1,000,000 scale can be used for observing general land development patterns but is not suitable for visually delineating the five specified regional planning land use categories.

General, but not unique, signatures were observed.

Acceptable inferences of land uses could not be consistently used.

It is expected that a larger scale would make the various features more visible.

It is hoped that electronically recorded and scanned images will increase the ability to obtain a unique land use "signature".

MSS band 4 has a "muddy" appearance which makes the various land uses blend together.

MSS band 5 provides the best overall image for land use purposes.

MSS band 6 accentuates the water bodies and the very intensely developed areas.

MSS band 7 in addition to accentuating the water bodies and the intensely developed land also makes certain roads highly visible.

FINDINGS

It was expected that gross observations of land developed patterns could be made for graphic presentation but would not serve as a suitable source for specifically delineating land uses as an input toward monitoring change or growth. The result of the investigation of the five specific land uses are given in the following pages.

VACANT LAND

Vacant land, for regional planning purposes at Tri-State, is defined as those areas which are susceptible for development. Land which does not contain structures or streets would be the prime requirement. Included in this definition is land which has a natural ground cover, wooded, or is used as agricultural land. Within the agricultural category that portion of a farm that contains buildings is considered developed and the rest is classified vacant.

Land in between partially developed areas is also defined as being vacant. This is a common condition in suburban areas and is critical for planning purposes.

Excluded from the Vacant category are parks and water shed land. The property lines cannot be differentiated from vacant land on photos and so must be delineated separately using other source data.

Finding

Vacant Land comprised of heavily wooded areas can be delineated for areas of 40 acres or larger on MSS bands 4 and 5.

Agricultural areas (defined as vacant) cannot be discerned from partially developed land. Various shades of grey at first appear to yield a discernible difference between developed and vacant. Detailed examination reveals that the same color density on different parts of the photo and in other parts of the Region have different land use characteristics. Consistent determination is not possible.

Prior knowledge is necessary to identify the specific land use pattern.

Vacant land is not observable on MSS bands 6 and 7.

SUMMARY STATEMENT

Black/White ERTS images at a scale of 1:1,000,000 is not suitable for determining vacant land for regional planning purposes. Other scales will be investigated.

DEVELOPED LAND

For regional planning purposes the term "developed land" is defined as that area on which structures and streets have been built. Included in the definition is open land - adjacent to and associated with the existing structures - which would not be subject to additional buildings, ie, the balance of a residential lot not occupied by the house. Developed land has been classified into 4 categories.

- sparsely developed - rural
- moderately developed - newer suburbs
- well developed - older suburbs
- intensely developed - urban

Finding

Developed land can be detected in varying degrees of success on all four MSS bands 4, 5, 6, 7. However, prior knowledge of whether the area is developed or not is necessary.

Only large areas of developed land can be observed on MSS band 4. The other three land development patterns cannot be delineated with accuracy.

On MSS band 5 the sparsely developed land can be distinguished from the intensely developed land. However it is not possible to separate the 4 classes of development uniquely from one another with sufficient accuracy.

On MSS band 6 only areas of very intense development can be observed. These would be the Central Business Districts (CBD) of

towns which are relatively small in size and have over 12,000 population. All other categories of development cannot be observed.

MSS band 7 has the same basic characteristics as band 6 but the very intense areas are more clearly defined and strip development can be detected.

SUMMARY STATEMENT

Developed land can be distinguished from undeveloped land in broad density ranges. The 4 classes of development cannot be uniquely separated for planning purposes.

RESIDENTIAL DEVELOPMENT

Residential development is important to the planning process since it defines people characteristics - where they live, income, auto availability, etc. The density of residential land has an important bearing on the type of services (roads, mass transit, water and sewer facilities, etc.) that are required.

Finding

Residential development could not be distinguished from other types of development. Prior knowledge of the area could be used to draw logical assumptions about the type of development. Multifamily housing (garden apartments) could not be observed as being different from single family housing areas or even from nonresidential land use. Areas where garden apartments were known to exist were investigated but could not be detected.

If the observed development is assumed to be predominantly residential then density differences between sparsely and intensely developed areas can be seen.

SUMMARY STATEMENT

Residential development cannot be sufficiently distinguished from other types of development for planning purposes.

NONRESIDENTIAL DEVELOPMENT

The primary characteristics of nonresidential land is that they are work sites. As such they are the designated end of journey-to-work trips and have goods movement and employment implications.

Finding

As in the case of residential land they do not have a unique signature which would visually set them apart from other types of developed land. However it is known from existing inventories that this type of development tends to cluster. If this knowledge was employed then some of the intensely developed areas could be designated as predominantly nonresidential.

SUMMARY STATEMENT

Nonresidential development cannot be sufficiently distinguished from other types of development for planning purposes.

STREETS

Streets are broken down into three categories for use in planning - limited access, arterial and local. For regional purposes the limited access highways and major arterials are of primary importance. Local streets are considered part of other types of developed land.

Finding

The most discernible streets are the limited access highways and major arterials in rural areas. Local streets blend in with other forms of development and with agricultural land. Most streets cannot be delineated in densely settled areas. In the cases where they can be observed it is because they are wide and relatively new. In some cases the arterial routes are more visible than the wider limited access highways.

SUMMARY STATEMENT

75% of the limited access highways and major arterials can be observed.

1970 LAND USE FILE

		OBSERVED DEVELOPMENT		PER CENT DEVELOPED				1970 LAND USE FILE										PERCENT OF TOTAL											
ST CTY	SQ MI X Y	HSNG UNITS	TOTAL	FLOOR X VRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC	FAR						
233	506 508														463	100							.000						
312	496 475	63	1056	262	794		143	3	5		11	125			489	1	77	6	4	2	94	8	.294						
243	503 486		45	45			2				2				625	100	13		13	87	100		.366						
243	499 479	12	124		124		23		4			19			310	1	93	16	16		84		.076						
302	498 505	128	2022	538	1454		122	4	9	26	51	32			468	7	79	32	7	3	68	62	.119						
224	504 488						39				13	26			590	2	94	33			67		.000						
224	503 488	5					27			12	12	3			404	3	94	45			55	81	.030						
203	505 505	53	486	30	456		74	23	4	6	1	38			419	7	85	46	6	32	54	4	.033						
224	502 488						21				10	11			844	1	98	48			52		.000						
309	499 493		1624	1284		340	105	54			50				537	8	84	52		52	48	99	.069						
224	501 490	2127	24229	1598	22631		177	12	47	48	56	13			191	29	52	61	26	7	39	81	.518						
224	504 487	539	2907	60	2347		28	1	14	5		8			418	4	94	71	52	2	29		.340						
243	499 490	740	32437	25625	6812		113	47	17	20		28			407	16	78	75	15	42	25		.882						
302	498 503	1471	28525	12273	14955	1287	291	75	95	52	41	27			1	468	29	62	77	33	26	23	60	.293					
203	505 508	1107	10211	428	7657	126	118	8	51	33	1	25			899	9	88	78	43	7	22	5	.256						
302	498 504	1002	17638	6257	11364	17	187	37	87	24	29	10			1	567	20	75	79	46	20	21	74	.272					
243	498 478	1	44	40	4		42	19	13	3		8			507	6	92	82	31	45	18		.003						
302	498 502	674	54266	47154	6784	328	318	184	57	29		46			2	401	38	56	85	18	58	15		.459					
312	495 475	970	20511	5879	9820	4812	373	164	107	25	2	51			24	224	54	37	86	29	44	14	4	.147					
309	499 494		18990	13830		5160	280	252		4	24				362	40	56	91		90	9	100	.170						
309	498 501	2674	43611	15037	23524		242	115	83	24	18	1			392	35	62	92	34	48	8	95	.451						
309	499 496	1	26692	26669	13		143	118		14		11			384	25	73	92		82	8		.463						
224	501 491	1022	35806	30556		5250	189	123		3		9			53	505	26	73	95		65	5	.458						
309	499 495	518	84361	71934	11560	867	231	185	11	25	1	7			3	422	34	65	97	5	80	3	10	.869					
312	495 477	3450	87611	51515	35870	226	410	175	157	73	2	2			1	196	67	32	99	38	43	1	43	.495					
312	495 478	411	8175	3954	4209	12	317	277	24	13		2			195	61	38	99	8	87	1		.060						
224	501 489						1			1					700	100	100						.000						
309	499 491		8450			8450	72			3					69	547	12	88	100				.269						
224	501 492		16945	16945			111	110		1					506	18	82	100		99			.350						
309	500 494		67500			67500	165								165	370	31	69	100				.940						
30																													
224	509 493						395				395				124	24					100	100	.000						
312	491 472						607						97	510		102	14				100		.000						
302	493 497						667	1						655	12		2		2		98		.000						
312	491 471	40	1536	571	501	464	551	2	1	4	26	78	437	5	40	2	7	2			98	5	.314						
203	505 509	13	300	43	225	32	87		1	1	84				440		84	2	1		98	100	.328						
224	509 495	5					819			27	758	33			71	3	8	3			97	96	.000						
224	509 490						234			6	228				260	1	53	3			97	100	.000						
302	493 498						662	8						534	20	10	4	2	4		1	96	.000						
302	495 501						458			21				437		86	4	16	4			96	.000						
241	509 487	35	463			468	267		12		15	240			158	3	37	5	5		95	6	.088						
224	509 494		32			62	108			7	100				591	1	85	7			93	100	.019						
312	498 470	34	353	8	345		717		40	10		651	15		7			7	6		93		.016						
312	493 473	185	2231	238	1993		540	3	31	11		298	197		79	7	13	8	6	1	92		.112						
243	502 486		270	270			18	1		1	16				538		97	8			5	92	100	.431					
309	493 495		6640	6640			587	49		11			1	524	2	10					8	90		.247					
243	502 487	14	270		83	207	108	5	1	5	74	23			388	2	78	10	1	4	90	76	.063						
307	480 490	127	1802	409	1447	36	592	1	50	17	384	140			1	11		12	8		88	73	.064						
320	495 488	11	217	68	139		61	7	1			14	39		469	1	89	13	2	11	87		.060						
243	497 482	32	307		307		305	16	7	17		264				13		13	2	5	87		.017						

A20

ST CTY	SQ MI X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	PERCENT DEVELOPED				LAND IN ACRES							PERCENT OF TOTAL							OPEN REC	FAR		
					TOTAL	FLOOR X 100 NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE			OPN	
302	494	497		14	269	93	176		499	5	1	60		9	418	6	67	13	12	14		1	86		.009	
243	500	482		458	5723	2113	3304	311	609	36	28	22	492	31			247	10	29	14	5	6	86	94	.154	
312	497	470		262	4315	1116	3200		634	8	57	26		544				14		14	9	1	86		.110	
320	493	489		93	3839	2891	948		633	65	8	21	3	25	510			15		15	1	10	85	1	.093	
312	493	474		27	1114	776	338		246	15	19	4		124	84		318	7	56	15	8	6	85		.068	
309	494	498		19	367	129	239		440	6	2	44		5	370		13	165	11	27	15	1	1	85		.013
243	496	482		1	24		24		504	50		36	341	78			162	13	24	17		10	83	81	.001	
302	493	499		9	17118	16902	113	103	554	83	1	10	37	56	367			40	16	7	17		15	83	8	.416
302	494	500		28	20303	19737	283	283	672	88	14	34	1	256	278		1	16	20	2	20	2	13	80		.340
243	495	486		35	2179	1994	185		497	15	8	78		396				20		20	2	3	80		.050	
243	497	477		102	848	109	739		202	4	25	11		162			241	9	54	20	13	2	80		.049	
309	496	500		153	5431	3488	1920	23	606	78	6	31		17	465		9	27	20	4	20	1	13	80		.101
312	495	471		18	2046	1366	180		630	61	25	16		379	122		28	21		21	4	10	79		.036	
320	487	480		84	929	33	848	48	572	1	102	10	269	183			7	21		21	18		79	59	.018	
243	496	483		118	1261	56	1191	14	627	38	24	72	236	257			133	18	18	21	4	6	79	48	.022	
243	498	484		77	1831	33	1765	33	642	56	41	43	375	127				22		22	6	9	78	75	.030	
312	498	472		132	2234	776	1458		616	19	88	28	177	302				22		22	14	3	78	37	.038	
243	497	481		269	2264	26	2238		379	2	62	21		294				22		22	16		78		.061	
312	497	473		337	4367	123	4244		678	92		57	117	1	411		35	21	5	22		14	78	22	.067	
243	496	484		351	3828	706	3107	15	707	17	71	81	310	229			62	22	8	24	10	2	76	57	.052	
243	498	479		295	6155	3403	2610	142	521	25	68	34	180	214			90	21	15	24	13	5	76	46	.112	
320	494	489			1143	1143			593	106		38		191	257			24		24		18	76		.018	
203	504	509		548	7400	3795	3605		520	7	32	85	371	24			249	16	32	24	6	1	76	94	.137	
302	493	500		9	38132	38019	113		543	131	1	1		79	331		51	22	9	24		24	76		.659	
312	494	471		24	25553	25251	302		628	106	4	6		406	70	35		24		24	1	17	76		.386	
243	500	481		11	120	16	104		64	8	4	4	6	43			647	2	91	25	6	13	75	12	.017	
312	490	472		69	2584	1710	851	23	634	81	18	22		235	239	39	64	23	9	25	3	13	75		.037	
243	499	480		190	1596	89	1410	97	232	1	22	37	8	164			223	13	49	26	10		74	5	.060	
312	496	472		557	9915	2921	6984	10	655	74	32	26		160	323	39		26		26	5	11	74		.132	
307	493	490			19317	19317			615	154		5		352	104			26		26		25	74		.279	
312	498	471		137	1901	496	1495		523	6	108	30		380				27		27	21	1	73		.030	
312	496	470		403	7895	1806	5026	1063	750	29	115	36		450	93	27		28		28	15	4	72		.087	
302	495	502		155	59898	58020	1878		466	66	4	40	106		229	20	101	23	18	28	1	14	72	32	.1049	
309	495	500		430	7477	2650	4765	62	508	25	98	23	3	18	338		2	118	24	19	29	19	5	71	1	.115
312	497	472			263	203		60	681	174		4	479				24	20	29	3	30		26	70	100	.003
302	494	499		42	1446	911	529		467	28	7	99		41	287		5	156	22	25	30	1	6	70		.024
241	509	489		576	2030		2030		155		42	4		109			675	6	81	30	27		70		.101	
320	488	481		799	10039	613	9313	113	714	19	162	18	491	8			17	30		30	23	3	70	98	.107	
243	501	483		45	397	16	381		92	22	4	3	21	43			474	5	84	31	4	23	69	33	.032	
312	497	474		452	5543	953	4590		350	21	65	25		88	151		281	18	45	32	19	6	68		.114	
243	497	484		529	5039	740	4290	8	412	25	80	25	11	271				32		32	19	6	68	4	.089	
243	496	481		149	1385	237	976	172	472	16	60	75	121	200			69	28	13	32	13	3	68	38	.021	
243	496	480		245	1000	137	863		595	11	104	78		403				32		32	17	2	68		.012	
312	493	470		103	11092	9483	1196	413	591	104	15	20	4	265	134	49	51	29	8	32	3	18	68	1	.136	
312	490	471		339	5326	1568	3718	40	666	14	143	67		317	125			34		34	21	2	66		.055	
312	494	473		670	8326	821	7145	360	617	15	112	32		381	16	62		36		36	18	2	64		.087	
243	496	479		79	1208	100	1103		634	8	66	157		404				36		36	10	1	64		.012	
309	496	497			2678	2678			584	170	2	20		151	225	19		36		36		29	64		.030	
224	508	495		2539	45031	8626	36185	220	621	66	87	73	1	394				36		36	14	11	64		.459	
309	495	498		69	58962	58100	862		721	245	1	19	3		453			37		37		34	63	1	.510	
312	494	470		8	20471	19848	85	538	540	170	5	14		249	92	10	4	37	1	37	1	32	63		.236	
312	497	471		431	6486	1611	4861	14	675	18	182	44	100	304	11	15	1	38		38	27	3	62	24	.057	
312	488	480		347	4926	415	3605	906	748	19	214	32	119	344			20	38		38	29	3	62	26	.040	

ORIGINAL PAGE IS
OF POOR QUALITY

SPARSELY DEVELOPED

A 21

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

EXHIBIT 3

PAGE 3

				PER CENT DEVELOPED		1970 LAND USE FILE												PERCENT OF TOTAL													
ST CTY	SQ MI X Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES				AREA				LAND				OPEN REC	FAR										
				TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV			RES	NRE	OPN							
312	494 475		425	7437	2628	4679	100	679	46	107	59	17	407		43	76	34	10	38	16	7	62	4	.066							
243	496 478		589	7862	3510	4236	46	557	57	95	60	22	322		71		34	11	38	17	10	62	7	.085							
243	497 480		672	7377	59	7318		571	3	95	128		346				39		39	17		61		.075							
243	495 480		29	992	898	94		248	81	11	5		151			334	17	57	39	5	33	61		.024							
243	501 485	1626		10798	1290	9156	342	478	14	92	89	115	168			219	28	31	41	19	3	59	41	.127							
307	486 496	533		7656	1741	5507	408	655	14	199	60	371	11				42		42	30	2	58	97	.064							
307	496 491	434		5852	1139	4613	100	666	47	160	44	374	12		29		42		42	24	7	58	97	.048							
224	508 489	933		7539	733	6150	656	146	8	33	21	24	60			413	11	74	42	22	6	58	29	.279							
309	495 497	27		34512	34122	390		605	229	2	16		36	312	10	70	38	10	42		38	58		.308							
224	507 488	4492		35210	2747	32451	12	176	8	31	37	46	54			563	10	76	43	17	4	57	46	1.076							
243	498 480	594		7274	1654	5620		733	84	112	119	6	412				43		43	15	11	57	1	.053							
312	493 471	235		24736	22305	2431		622	177	56	21		324	31	13	7	42	1	43	9	28	57		.213							
312	492 471	1091		16503	4898	11340	265	583	43	129	72	44	162	122	12	63	40	10	44	22	7	56	13	.148							
243	496 485	1409		14218	2575	11643		530	30	121	81	10	289				44		44	23	6	56	3	.141							
243	496 486	523		8383	2679	5603	101	521	22	77	108	16	276		23		44		44	15	4	56	5	.084							
309	494 495			29550	29420		130	595	95		159		4	326	12		45		45		16	55		.255							
312	493 481	436		38818	34164	4654		672	141	112	49	1	328	41			45		45	17	21	55		.294							
203	500 509	9340		100918	11439	89429		453	30	81	92	244	6				45		45	18	7	55	98	1.141							
316	486 502	703		8508	1173	7235	100	647	8	210	63	292	54		20		46		46	32	1	54	84	.065							
307	486 493	659		9306	2080	7113	113	683	19	216	78	305	65				46		46	32	3	54	82	.068							
312	496 474	755		9496	1811	7599	86	585	35	171	63		259	57	1	39	43	6	46	29	6	54		.081							
243	498 481	943		10562	719	9833	10	577	8	134	124	1	310				46		46	23	1	54		.091							
313	499 473	856		29474	19985	9389	100	711	84	166	78	5	343	32	2		46		46	23	12	54	1	.205							
312	494 472	304		39555	36406	3149		749	184	56	24	6	363	24	92		47		47	7	24	53	2	.255							
312	496 471	977		14642	3268	11320	54	576	64	137	63		303		9		47		47	24	11	53		.123							
316	486 501	708		11376	1845	8468	1063	478	16	178	34	222	27				48		48	37	3	52	89	.115							
243	499 483	1094		15082	1465	13498	119	423	20	102	50	101	117		33		48		48	24	5	52	46	.169							
312	491 473	1		1927	1704	20	203	604	105	2	16	6	87	221	166	33	45	5	48		17	52	2	.015							
312	492 473	39		832	12	820		678	7	18	9		76	276	292	158	39	19	48	3	1	52		.006							
312	498 473	523		8705	2755	5940	10	704	196	94	44	314	50	1	5		48		48	13	28	52	86	.059							
312	490 473	451		6123	1314	4786	23	604	23	103	44	3	311		120		48		48	17	4	52	1	.048							
307	486 492	565		7313	1521	5666	126	737	24	232	43	295	83				49		49	31	3	51	78	.047							
307	486 495	614		9927	2552	6215	1160	597	39	171	64	196	106		21	5	49	1	49	29	7	51	65	.077							
309	496 499	181		24458	21365	2630	463	561	146	25	95	3	135	145	11		50		50	5	26	50	1	.202							
243	495 484	19		3388	3304	84		468	217	3	16		224		7	218	34	32	50	1	47	50		.033							
302	494 502	600		9397	3335	6062		472	25	170	39		238				50		50	36	5	50		.092							
243	503 483	1910		19316	1501	17795	20	546	41	145	89	52	220				50		50	27	7	50	19	.161							
307	486 489	789		16054	8034	8050		616	55	208	49	260	44			8	50	1	51	34	9	49	85	.118							
309	496 498	197		24357	21988	2183	186	648	196	19	106		65	256	7		51		51	3	30	49		.171							
312	496 473	1057		17724	4411	13313		559	49	53	91		142	127	96	2	52		52	10	9	48		.141							
320	487 485	986		12978	2352	10216	410	755	24	247	57	280	73			75	53		53	33	3	47	79	.074							
241	509 488	998		5632		5125	507	194		90	14	12	78				39	27	53	46	47	14		.125							
313	499 474	887		10259	549	9200	510	437	7	180	46	3	125	77		166	39	27	53	41	2	47	1	.101							
320	486 486	986		15441	3348	12090	3	624	53	219	67	245	40				54		54	35	9	46	86	.105							
307	488 499	1489		19978	1864	17470	644	645	37	217	79	251	46		14		54		54	34	6	46	85	.132							
313	499 472	1349		22991	8159	14769	63	725	67	236	82	3	320		17	2	55		55	33	9	45	1	.131							
243	498 482	1826		23112	3409	19703		561	26	159	122		253				55		55	28	5	45		.173							
320	486 485	280		24987	21467	3070	450	674	160	173	43	221	74		3		56		56	26	24	44	75	.151							
243	498 483	423		3271	484	2781	6	731	168	38	21	214	108		182		56		56	5	23	44	66	.018							
224	503 489	4886		45649	4876	40773		509	41	112	139	214	3				57		57	22	8	43	99	.359							
243	495 479	133		1205	295	900	20	491	225	46	15	7	198			381	33	44	58	9	46	42	3	.010							
309	496 494	4209		67215	24593	42576	46	588	121	137	81	121	129			89	50	13	58	23	21	42	48	.456							

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ST CTY	SQ MI	X Y	OBSERVED DEVELOPMENT	PER CENT DEVELOPED				1970 LAND USE FILE				PERCENT OF TOTAL												OPEN PEC	FAR
				HSNG UNITS	TOTAL	FLOOR NRS	100 RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	MAT	DEV	AREA MAT	DEV	LAND RES	NRE	OPN		
307	486	494		443	12717	7880	4734	103	600	61	159	118		251		10		58	58	27	10	42			.084
320	486	481		557	7603	1911	5692		705	15	346	36		293		16		58	58	49	2	42			.042
307	486	499		613	7564	998	6556	10	558	24	136	56	175	58		109		58	58	24	4	42	75		.053
307	486	498		928	12537	737	11550	250	608	9	288	60	4	247				59	59	47	1	41	2		.081
243	497	479		798	9556	1124	8420	12	563	18	180	137	3	225				60	60	32	3	40	1		.065
312	495	470		3	760	12	38	650	558	1	15	132		91	319	8		59	1	60		40			.005
243	497	483		15	2438	2438			965	564		21	198	182			10	60	1	61		58	39	52	.010
320	486	480		401	4817	656	4161		733	2	402	46		283				61		61	55		39		.025
312	490	470		995	26281	15526	10426	335	784	126	278	74	17	289			2	61		61	35	16	39	6	.126
302	493	502		296	12615	9478	3002	135	722	376	32	25		285		6		61		61	4	52	39		.066
241	508	499		5750	82304	8876	73396	32	661	34	190	179	249	8				61		61	29	5	39	97	.468
312	493	475		18	20080	19861	219		295	177	2	2		64	47	3	305	31	51	62	1	60	38		.250
312	493	480		1339	15323	1433	13870	20	644	49	223	94	9	139	95	36		62		62	35	8	38	4	.088
203	506	507		2000	17234	3556	10941	2737	327	32	95	66	7	116			12	23	63	62	29	10	38	5	.194
312	498	474		988	11140	884	19110	146	337	10	153	42		54	76	3	210	38	38	62	45	3	38		.123
312	490	478		1280	20832	5561	15231	40	612	155	173	52	1	190	34	6		63		63	28	25	37	1	.124
312	490	477		1170	29930	16131	13343	456	713	173	214	52	163	91		19	13	63	2	64	30	24	36	64	.150
243	499	484		1709	27697	3330	24293	24	543	33	218	102	11	179				65		65	40	6	35	6	.180
312	492	476		522	7619	2224	5350	45	645	126	76	87		181	46	128		65		65	12	20	35		.042
312	493	478		980	23141	12100	10871	170	655	113	122	153	10	209			48	66		66	19	17	34	5	.122
243	500	487		1599	21309	4051	17149	109	574	48	176	158	11	182		15		65	3	66	31	8	34	6	.128
316	486	503		3894	110882	68159	42510	213	666	186	139	114	94	125		8		67		67	21	28	33	43	.570
312	491	479		1353	20501	6688	13598	215	786	59	245	98	5	255		124		67		67	31	8	33	2	.089
243	494	486		41	26379	25660	527	192	501	275	3	30		164			30	53	21	67	1	55	33		.180
312	491	480		1422	17910	3064	14711	135	661	54	296	102	172	36				68		68	45	8	32	83	.091
312	492	472		499	12302	6201	5198	903	680	51	237	26	5	81	122	159	48	65	7	69	35	8	31	2	.060
320	487	482		1125	13568	2135	11273	160	760	30	427	70	185	49				69		69	56	4	31	79	.059
320	487	481		334	5875	2085	3790		374	9	220	26	87	28		3		69		69	59	2	31	75	.052
312	494	480		425	10259	3837	4422	2000	649	177	116	67	42	81	78	88	64	63	9	69	18	27	31	21	.053
320	487	486		150	38370	35891	1666	813	581	264	77	23	168	14		36		69		69	13	45	31	92	.221
243	498	487		3422	38403	4158	33941	304	697	41	285	154	123	91		3		69		69	41	6	31	58	.183
312	494	474		93	1598	428	1160	10	502	87	45	25		155		190		69		69	9	17	31		.011
312	490	475		714	21277	13936	7213	128	567	181	138	71	7	164		6		70		70	24	32	30	4	.123
243	495	485		4	170	92	78		831	548	12	25		246			53	66	5	70	1	66	30		.001
241	507	498		4512	50365	9250	40935	180	666	185	115	107	197	3		59		70		70	17	28	30	98	.248
320	486	487		1802	29037	9507	19195	385	584	67	257	86	167	7		1		70		70	44	11	30	96	.163
320	488	482		832	12079	2944	8915	220	622	22	270	51	150	35		94		70		70	43	4	30	81	.063
307	490	496		2496	56150	29725	26382	43	616	135	212	80	164	13		12		71		71	34	22	29	93	.293
312	495	472		1131	17321	5863	11450	8	664	106	271	82	3	189		13		71		71	41	16	29	1	.084
243	499	482		2471	31198	2953	28191	54	603	37	290	102	1	172				71		71	48	6	29	1	.167
312	490	474		544	17422	10659	6550	213	653	77	157	74		190		156		71		71	24	12	29		.086
312	493	472		1064	14916	2660	11391	865	493	33	238	59	4	140		18		71		71	48	7	29	3	.098
320	490	483		1685	20768	3164	17217	397	711	34	280	170	176	16	9	27	12	71	2	72	39	5	28	88	.093
230	509	508		1192	22585	10062	12305	218	596	64	281	64	154	15		17		72		72	47	11	28	91	.121
320	491	488		1123	45886	33975	11901	10	592	196	181	59	160	6		1		72		72	31	31	28	97	.247
243	499	486		1510	13075	336	12739		716	164	198	152	1	200				72		72	28	23	28	1	.058
307	488	498		2334	31634	7195	23805	634	729	102	344	80	153	50				72		72	47	14	28	75	.138
230	508	509		229	2698	288	2410		440	1	276	37	21	77	27		260	45	37	72	63		28	17	.020
241	508	505		4967	49387	4299	45025	63	621	21	281	150	134	35				73		73	45	3	27	79	.251
243	497	478		62	6360	4702	1258	100	666	410	39	42	4	171				74		74	6	62	26	2	.028
312	495	483		138	3308	6961	1427		509	341	19	16		131	2		181	55	26	74	4	67	26		.051
312	493	477		1727	22407	4623	17761	23	632	65	216	144		167		41		74		74	34	10	26		.111
312	495	473		1407	20561	4919	15742		659	74	282	123	2	171		7		74		74	43	11	26	1	.098

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REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

EXHIBIT 3

PER CENT DEVELOPED

1973 LAND USE FILE

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ST CTY	SQ MI X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES										PERCENT OF TOTAL										OPEN REC	FAR	
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN								
312	491	476		903	21232	11533	9699		660	101	132	240	11	156		19	1	75		75	20	15	25	7						.099	
309	495	499		2919	41958	12344	29311	333	677	89	280	127	5	45	122	9	19	73	3	75	41	13	25	3						.190	
312	491	477		1464	22603	4953	17560	90	654	60	304	99	2	163		26		75		75	46	9	25	1						.106	
203	506	506		134	3029	2766	249	14	53	31	2	4	1	13		2	517	7	91	75	5	59	25	4						.175	
224	509	492		11	439		489		374		2	4	92	2		274	70	63	16	75	1		25	98						.004	
243	499	481		2725	28323	1953	26470		617	38	307	125		147		17		74	3	76	50	6	24							.138	
243	501	486		1617	18073	2674	15321	58	594	253	139	85	22	122		4		76		76	18	43	24	15						.092	
312	491	475		142	13904	4132	1436	8340	635	33	42	65	3	151		340		76		76	7	5	24	2						.066	
230	509	509		319	4113	254	3660	203	588	8	392	48	18	95	24	4	121	64	17	77	67	1	23	13						.021	
243	499	435		69	1599	11	1511	77	506	124	23	92	34	76		157		78		78	5	25	22	31						.009	
320	490	488		2072	28675	7950	20725		618	60	324	100	124	11				78		78	52	10	22	92						.136	
241	509	505		4221	46997	11916	34389	192	615	46	270	166	45	88				78		78	44	7	22	34						.224	
243	497	485		455	25878	13168	12521	189	939	409	129	114	93	93				78		78	15	49	22	50						.091	
312	493	479		1939	38805	18639	20130	36	661	127	231	163	17	78	45	1	1	79		79	35	19	21	12						.171	
312	489	481		1521	19902	4295	15580	37	752	61	451	83	1	155		1		79		79	60	3	21							.077	
320	499	487		1822	27097	8503	18594		632	73	281	116	44	90		29		79		79	44	12	21	33						.125	
230	508	508		258	17145	644	2663	13842	351	2	196	43	60	10		40	351	40	50	80	56	1	20	86						.140	
316	486	506		759	16857	8021	8773	63	658	187	245	82		129		15		80		80	37	28	20							.073	
243	498	486		3908	40539	3255	37189	95	672	20	297	220	2	132				80		80	44	3	20	2						.173	
243	500	486		2817	35012	3415	31583	14	611	50	321	114	2	123				80		80	53	8	20	2						.165	
312	494	479		561	51606	45463	6200	3	647	383	83	51	3	71	49	4	88	71	12	81	14	59	19	2						.226	
320	489	484		1699	22245	5252	16993		627	91	347	75	1	113				82		82	55	15	18	1						.100	
312	495	474		2122	29655	7411	22244		684	81	328	148	5	117		4		82		82	48	12	18	4						.121	
302	493	503		164	41503	39730	1773		643	459	21	40		116		7		82		82	3	71	18							.181	
312	491	478		2175	32550	7737	24813		588	130	161	103		104		89		82		82	27	22	18							.154	
320	488	483		1437	15673	480	15190		571	11	369	88	31	72				82		82	65	2	18	30						.077	
312	492	481		545	31806	25316	6490		640	337	124	65	2	114				82		82	19	53	18	1						.139	
203	507	506		1785	27655	1437	25966	252	218	9	78	50	3	37			41	573	23	72	82	36	4	18	7						.356
320	489	488		2137	45519	23411	22108		680	128	307	126	117		1	1		83		83	45	19	17	99						.186	
312	492	478		317	8460	3748	3537	1175	642	49	85	121		108		278		83		83	13	8	17							.036	
312	489	480		1368	16184	1961	14223		556	23	375	68		90				84		84	67	4	16							.080	
312	490	479		1943	25522	5338	20184		548	59	267	134	1	88				84		84	49	11	16	1						.127	
241	506	505		2641	38298	5594	32257	447	650	54	289	204	11	91		1		84		84	44	8	16	11						.160	
243	498	489		1158	31187	18490	12648	49	482	260	98	47	9	69			226	58	31	84	20	54	16	11						.177	
241	508	506		1411	31114	2537	22177	6400	397	24	83	75	21	40		153	438	40	52	85	21	6	15	34						.213	
307	489	497		3381	43930	8334	35596		649	44	322	105	60	38		79		85		85	50	7	15	61						.183	
312	492	470		2550	47748	23867	26784	97	638	147	261	118	7	74	14	18	38	80	6	85	41	23	15	8						.202	
320	490	487		2190	41904	19652	22100	152	669	135	333	100	37	60		3		85		85	50	20	15	38						.168	
241	507	502		6148	72089	8690	62924	475	640	27	178	163	70	11		190		87		87	28	4	13	86						.296	
312	499	471		858	12468	2578	9890		635	30	467	53		85			28	83	4	87	74	5	13							.052	
307	489	496		3895	61162	20438	40089	635	585	91	311	97	56	18		12		87		87	53	16	13	76						.275	
243	499	487		2089	23921	7309	16516	36	644	178	150	232	43	41				87		87	23	28	13	52						.098	
316	499	501		1758	62708	44722	17996		699	253	214	142	26	64				87		87	31	36	13	29						.237	
307	490	497		4372	52683	6619	46331	33	730	66	436	116	88	5		18		87		87	60	9	13	94						.190	
309	492	495		6241	108877	44975	63879	23	768	174	341	154	36	62			2	87		87	44	23	13	36						.373	
243	497	486		2882	30225	2799	27426		605	26	237	267	6	68				88		88	39	4	12	9						.131	
320	489	482		908	22115	12445	9670		592	117	285	67	3	70		51	8	87		87	1	88	20	12	4						.098
320	490	482		1921	24399	4847	19462	90	683	52	375	109	27	56		63	7	87		87	55	8	12	32						.093	
312	494	481		1324	21149	6293	14566	350	597	248	177	102	8	63				88		88	30	41	12	11						.092	
230	509	507		572	10573	4597	5730	256	422	20	289	55	19	33		7	286	52	40	88	68	5	12	37						.065	
320	486	482		1798	22413	4012	18288	113	684	36	484	96																			

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PAGE 6

			PER CENT DEVELOPED	1973 LAND USE FILE												PERCENT OF TOTAL												PAGE 6	
ST	SQ	MI	OBSERVED	HSNG	FLOOR X 100				LAND IN ACRES								AREA				LAND				OPEN	FAR			
CTY	X	Y	DEVELOPMENT	UNITS	TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC					
312	490	480		753	9346	1213	7930	203	665	16	476	100	1	72				89		89	72	2	11	2		.036			
263	502	504		6800	125827	74171	51644	12	491	281	41	115	3	50			46	82	9	89	8	57	11	6		.660			
224	507	491		34	220			220	417	125		14	45			233		89		89		30	11	100		.001			
302	494	503		2937	49541	17584	31947	10	641	137	304	121	10	61		8	37	84	5	89	47	21	11	15		.199			
320	492	489		4998	108808	56090	52718		566	137	174	87	45	12		110		90		90	31	24	10	80		.490			
312	492	477		2089	24865	3624	21163	78	624	36	342	182	32	32				90		90	55	6	10	50		.102			
243	501	487		2930	34782	7594	21832	5355	773	70	197	199	1	78		228		90		90	25	9	10	2		.115			
307	486	497		2272	29785	5936	23799		668	48	446	104	3	66				90		90	67	7	10	4		.114			
507	489	490		6198	78871	13282	63467	2122	582	60	313	143	52	6		8		90		90	54	10	10	90		.345			
312	490	476		2022	25255	4721	20524	10	700	74	379	131	3	61		52		91		91	54	11	9	4		.091			
241	506	497		5186	55139	11660	43233	246	777	100	116	119	31	39		372		91		91	15	13	9	44		.179			
320	488	488		2145	59558	37351	22207		640	185	323	77	8	46				92		92	51	29	8	15		.234			
312	493	476		231	14061	11640	2341	80	424	154	44	128	3	27	4	64	95	75	18	92	10	36	8	8		.083			
316	488	502		3863	71721	27052	39766	4903	662	114	334	168	27	17		3		93		93	50	17	7	61		.266			
312	492	479		1260	24107	10941	13086	80	632	250	178	121	18	28		36	3	92		93	28	40	7	39		.095			
320	486	483		1530	23190	7934	15133	123	605	64	396	101	21	20		4		93		93	65	10	7	51		.094			
320	488	489		2592	46825	20547	26268	10	612	96	323	96	4	41		53		93		93	53	16	7	9		.190			
241	507	499		6292	81741	26237	55285	219	528	100	222	171	10	25				93		93	42	19	7	28		.380			
313	499	470		177	3206	1007	2199		543	18	461	25		28	11			93		93	85	3	7			.015			
312	491	470		1432	18002	3334	14572	96	426	62	255	82	5	22				94		94	60	15	6	20		.104			
307	488	496		3136	48493	16208	32187	98	583	102	353	72	27	4		19		95		95	61	17	5	87		.202			
243	498	485		497	14432	9086	5396		466	368	28	45		24				95		95	6	79	5			.075			
320	486	484		1441	16047	1470	14543	34	564	15	422	96	12	19			7	93	1	95	75	3	5	38		.069			
307	488	497		2494	31575	6001	25574		591	47	432	84	13	15				95		95	73	8	5	47		.129			
316	489	499		1080	75558	56361	19297		626	151	346	93		22		14		96		96	55	24	4			.287			
320	499	483		1438	51570	36322	15248		657	291	250	86		29		1		96		96	38	44	4			.189			
316	489	501		5215	103030	48360	54524	146	595	172	250	147	7	17		2		96		96	42	29	4	29		.414			
312	494	482		2199	26902	4600	22302		572	51	327	167	20	1		5	1	96		96	57	9	4	93		.112			
241	507	505		4923	54085	9432	44629	24	625	50	322	228	3	22				96		96	52	8	4	10		.207			
320	487	483		2251	42143	18908	23035	200	688	129	430	108	2	18				97		97	63	19	3	11		.145			
312	490	481		1897	23334	3128	20200	6	604	76	393	113		15			3	97		97	66	13	3			.091			
307	490	498		3238	45893	12254	33568	71	594	72	406	98	10	6		3		97		97	68	12	3	63		.182			
312	492	480		2398	31353	5300	26029	24	625	100	344	122	6	10		42		97		97	55	16	3	40		.118			
307	489	498		3131	35731	4826	31905		649	52	443	114		21		20		97		97	68	8	3			.134			
320	487	484		1310	22458	9010	13448		456	55	319	68	6	8				97		97	70	12	3	42		.117			
307	493	491			15675	15675			532	417		99		4	13			97		97		78	3			.070			
316	488	500		3184	44441	8269	33527	2645	692	62	374	177	12	12		55		97		97	54	9	3	50		.153			
316	489	500		2627	58937	29747	27190		677	114	356	130	14	8		55		97		97	53	17	3	62		.199			
320	486	488		1891	44261	24527	19563	171	611	178	309	99	6	7		11		98		98	51	29	2	44		.170			
320	490	484		2419	31820	7191	24629		600	45	351	194		11				98		98	58	7	2			.124			
307	489	491		8023	93368	14274	84078	16	635	63	405	158	3	6			2	98		99	64	10	1	32		.361			
307	488	495		3255	43304	6096	33554	654	647	41	481	84	4	4			33	99		99	74	6	1	50		.145			
312	492	475			4843	4843			695	162		8			8	517	7	98	1	99		23	1			.016			
316	488	503		3296	45758	11955	33797	6	591	37	265	171	1	7		110	32	94	5	99	45	6	1	16		.180			
224	503	492		6543	67448	14004	53393	51	841	48	102	74	2	9		606		99		99	12	6	1	14		.186			
241	509	506		24	735	44	691		29	1	16	13						318	8	92	100	53	4			.057			
230	508	507		41	491		491		17		16	2						430	4	96	100	89				.065			
203	503	503		2	3600	3600			314	314								285	52	48	100		100			.026			
312	492	474							546			11				535	5	99	1	100						.000			
312	491	474							614			94				520		100		100						.000			
279 25																													
243	496	476		3	33		33		57			2		54			579	91	5	1		95			.028				

REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

EXHIBIT 3

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PER CENT DEVELOPED

1970 LAND USE FILE

ST CTY	SQ K	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X LJJ				LAND IN ACRES							PERCENT OF TOTAL							OPEN REC	FAR			
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE			OPN		
309	494	496			50	50			597	16	71			501	9			16	16		3	84				.001	
309	493	496			17668	17668			549	92	6			447	3	2		18	19		17	81				.399	
203	505	506		314	7470	324	7092	54	218	8	36	23	103	49		201		16	48	31	17	3	69	68		.258	
309	495	496		8	824		101	723	471		15			45	262	149	184	25	28	35						.011	
312	494	483		182	3492	1350	2142		638	112	17	109		202	195	3	39	36	6	38	3	18	62			.033	
241	506	502		2070	24480	9315	14861	1304	942	144	48	177	451	123		9		39	1	39	5	15	61	79		.153	
241	509	496		2300	18543	3326	15216	6	570	17	129	89	166	170				41		41	23	3	59	49		.182	
203	504	506		4565	49597	8486	41031	100	761	62	123	109	247	202		13	19	40	2	41	17	8	59	55		.365	
224	508	493		3750	45418	2060	43358		602	9	135	113	206	139			286	29	32	43	22	2	57	60		.406	
203	504	505		1341	10010	1400	7346	1263	269	13	66	45	33	113			251	24	48	46	24	5	54	22		.187	
309	496	501		31	42898	41839	383	676	568	222	6	27		72	229	11	89	41	14	47	1	39	53			.369	
224	508	491		960	29716	15912	13126	678	407	66	63	66	100	113				48		48	15	16	52	47		.351	
320	493	483		338	8869	4705	3900	264	613	172	56	25		155	158	46	40	46	6	49	9	28	51			.068	
302	495	505		565	7649	1708	5941		647	26	109	186	118	133	74			46	7	50	17	4	50	36		.055	
243	496	477		1504	17656	4121	13447	88	574	35	172	86	3	277				48	5	51	30	6	49	1		.138	
241	507	501		4603	61645	6996	54659		503	21	109	129	236	7				52		52	22	4	48	97		.546	
302	493	501		229	78635	75249	2644	742	758	265	102	27		62	298	3	7	52	1	53	13	35	47			.454	
302	494	501		20	84289	84049	240		687	329	37	14		7	300			55		55	5	48	45			.510	
203	501	509		13947	150071	31999	117362	710	821	71	201	191	292	66				56		56	24	9	44	81		.744	
243	501	484		921	9151	275	8824	52	201	4	75	33	14	74			222	27	52	56	37	2	44	16		.188	
243	495	487		603	18755	14714	3998	43	581	185	105	32	12	243		4	273	38	32	56	18	32	44	5		.132	
320	488	487		814	38603	30654	8416	133	686	194	136	51	290	5		9		57		57	20	28	43	98		.227	
224	508	492		4131	58103	7546	50510	47	726	31	237	150	267	42			154	47	18	58	33	4	42	86		.320	
320	494	484			36032	36032			601	279		53		33	269	28	18	58	3	60		46	40			.230	
302	496	502		502	57744	52414	5207	123	624	282	52	39	5	25	213	7		61		61	8	45	39	2		.348	
302	495	504		2221	30112	5978	24048	86	526	30	187	111	162	5	32		108	52	17	62	36	6	38	82		.211	
320	492	482		817	40753	30843	8347	1573	631	142	179	66	10	180	36	18	21	62	3	64	28	22	36	5		.231	
203	503	509		2936	41563	13914	27642	7	594	45	153	197	23	176				66		66	26	8	34	12		.242	
309	496	496		147	16297	12727	1570	2000	590	292	8	10		61	140	79	93	57	14	66	1	50	34			.096	
243	494	485			4598	1298		3300	470	268		1		99	55	46	141	52	23	67		57	33			.033	
307	495	492			5188	5178		10	403	247		11	4	101	28	11	184	46	31	67		61	33	3		.044	
320	493	484		593	13851	7492	6206	153	562	260	52	46	36	87	57	24		68		68	9	46	32	20		.083	
243	499	488		2712	29935	1457	28434	44	668	119	226	82	114	102			26	68		68	34	18	32	53		.152	
241	506	504		3038	36429	4115	32314		578	156	150	97		175				70		70	26	27	30			.207	
243	500	489		771	33933	26072	7421	440	256	107	37	35	9	67			331	31	56	70	15	42	30	11		.433	
320	491	486		3445	48173	11802	35651	720	671	50	298	112	203	1		7		70		70	44	7	30	99		.237	
243	500	488		4547	79730	30260	44923	4547	597	108	197	123	23	146			13	70	2	72	33	18	28	14		.428	
224	508	494		9280	90533	15430	74512	541	686	40	290	174	56	126				73		73	42	6	27	31		.412	
307	487	494		1751	32958	14849	18079	30	585	72	229	124	1	159				73		73	39	12	27	1		.178	
243	501	488		1568	19577	3324	16249	4	322	42	128	69	5	78			302	38	48	74	40	13	26	5		.188	
241	508	502		8031	75560	17881	57667	12	700	119	247	155	174	5				74		74	35	17	26	97		.333	
320	489	486		2000	30941	10271	20670		603	112	237	105	3	145				75		75	39	19	25	2		.156	
241	508	501		8097	60447	7924	52523		659	27	280	188	161	2				75		75	43	4	25	99		.280	
302	495	503		1271	36176	19244	13363	3564	597	162	110	86	43	37	71	88	117	63	16	75	18	27	25	28		.186	
203	503	508		4487	70235	34415	35739	81	563	160	122	141	22	119				75		75	22	28	25	16		.381	
316	495	505		2904	47716	17008	30285	423	619	94	236	87	8	140			54	6	75	1	76	38	15	24	5		.233
203	501	508		7945	98059	22290	75769		420	116	88	117	81	18				76		76	21	28	24	82		.701	
243	496	487		2915	44141	17093	26943	105	602	116	236	110	7	133				77		77	39	19	23	5		.219	
312	493	482		855	77192	68026	9166		597	240	167	53	14	121		2		77		77	28	40	23	10		.385	
243	500	485		3534	40472	2948	37147	377	573	84	239	122	20	108				78		78	42	15	22	15		.209	
203	505	507		5245	50656	6142	44258	256	567	28	234	184	30	91			43	73	7	79	41	5	21	25		.261	
203	504	507		2449	38274	19421	18656	197	569	147	86	172	4	107			52	81		81	15	26	19	3		.192	

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1970 LAND USE FILE

PER CENT DEVELOPED

			PER CENT DEVELOPED	1970 LAND USE FILE										PERCENT OF TOTAL											
ST CTY	SO MI X	MI Y	OBSERVED DEVELOPMENT	MSG UNITS					LAND IN ACRES						--AREA--		LAND				OPEN	FAR			
					TOTAL	FLOOR NRS	100 RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	MAT	DEV	WAT	DEV	RES		NRE	OPN	REC
243	499	489		6746	89956	33578	56274	134	697	119	297	152	3	127				81		81	43	17	19	2	.364
241	505	504		5522	61209	19246	41779	185	587	106	220	152	28	81			69	73	10	81	37	18	19	26	.294
309	497	501		6977	55454	22946	72174	294	613	83	285	127	112	5		1	17	79	3	81	46	14	19	96	.442
312	495	481		1177	25643	15754	13817	72	445	267	71	27		63	17		189	58	30	82	16	60	18		.168
312	496	505		2295	33781	9492	23743	549	583	59	293	117	50	52		16		82		82	50	10	18	49	.161
312	494	478		1287	69089	56029	13060		616	332	106	74	16	88				83		83	17	54	17	15	.310
320	488	485		1848	23674	5142	18539	45	653	44	392	109	31	77				83		83	60	7	17	29	.100
307	487	499		1488	17228	2033	15132	63	685	17	413	78	11	99		67		84		84	60	2	16	10	.069
243	487	487		4592	61695	10092	51605	8	601	47	291	165	3	94		1		84		84	48	8	16	3	.281
302	497	505		5101	80313	24914	55471	33	709	111	298	185	42	73				84		84	42	16	16	36	.309
320	489	485		1460	46023	30270	15713	40	644	161	276	102		96		9		85		85	43	25	15		.193
320	487	489		2365	36679	11911	24217	551	713	82	439	89	77	26				86		86	62	11	14	74	.138
241	505	497		6688	70241	10348	59850	43	590	40	254	216	6	74				86		86	43	7	14	7	.316
312	491	481		1787	36231	17185	19018	28	612	160	277	91	13	70		1		86		86	45	26	14	16	.157
241	508	503		5097	57741	8334	49336	71	602	22	274	148	74	12		72		86		86	46	4	14	86	.257
320	492	483		819	95171	86796	8375		726	418	144	71	11	82		4		87	1	87	20	58	13	11	.345
302	492	500		3000	67032	36219	30733	80	623	134	276	121	22	34	23	12		87		87	44	22	13	27	.283
307	487	495		2639	32535	4927	27608		573	42	357	99	31	43				87		87	62	7	13	42	.150
302	491	499		1818	32001	12742	18882	376	549	119	229	137	33	32			43	82	7	88	42	22	12	51	.152
224	507	497		9307	105338	19813	81419	4106	652	72	214	181	38	38		108		88		88	33	11	12	50	.420
302	490	505		964	41834	32040	9754	40	470	93	209	119	28	18	12		3	87	1	88	42	20	12	48	.233
243	500	484		3758	52183	13071	37610	1502	601	107	284	133	26	48		4		88		88	47	18	12	35	.227
241	506	499		7053	76233	8254	67973	6	741	29	253	186	91			182		88		88	34	4	12	100	.269
302	488	505		3261	45118	11815	33257	46	621	68	369	111	1	67		5	18	87	3	89	59	11	11	1	.187
316	487	505		4834	63414	12574	49830	1010	714	68	429	137	77	4			37	84	5	89	60	10	11	96	.230
302	490	504		2847	48965	18039	30818	108	757	188	286	86	4	44	33	116		89		89	38	25	11	5	.167
307	487	491		1620	26562	9852	16338	372	557	74	136	80	21	41		5		89		89	60	13	11	34	.123
320	487	488		2041	26067	5127	20790	150	647	46	420	114	3	63		1		90		90	65	7	10	5	.103
307	487	492		2659	33454	6285	27159	10	664	51	429	119	28	38				90		90	65	8	10	42	.128
312	496	503		2762	60775	30725	28990	1060	636	175	256	123	18	21	26	17	49	83	7	90	40	28	10	28	.244
320	490	485		2485	38567	13141	25386	40	654	89	387	113	58	6				90		90	59	14	10	91	.150
320	492	484		2355	48699	23538	25118	43	623	251	221	88	37	25		1		90		90	35	40	10	60	.199
302	491	501		3330	67107	31203	35445	459	626	155	286	117	51	8		9	8	89	1	90	46	25	10	86	.272
320	491	483		2928	71960	41371	30583	6	696	234	283	111	66	2				90		90	41	34	10	97	.263
307	487	497		2351	33053	8728	24285	40	579	72	372	81	50	3				91		91	64	12	9	94	.144
316	485	503		4339	79393	34258	45135		560	82	306	124	25	23		1	26	87	4	91	55	15	9	51	.356
307	497	493		3171	48711	16967	31744		607	68	345	140	5	49				91		91	57	11	9	10	.202
302	496	504		3428	55031	19095	35840	96	607	95	331	127	19	10	25	1		91		91	54	16	9	36	.228
320	488	486		2086	41383	19701	21682		649	175	290	113	59			11		91		91	45	27	9	100	.161
312	491	498		3030	61885	29336	32133	416	604	168	271	107	41	12		5	44	85	7	91	45	28	9	77	.258
320	492	485		1057	32669	21608	11061		648	287	113	80	4	52		111	15	89	2	91	17	44	9	8	.127
307	487	498		2352	37749	12344	24677	728	682	84	447	94	49	7		2		92		92	66	12	8	88	.138
241	509	503		4517	63314	10288	53021	5	632	54	328	200	13	37				92		92	52	8	8	26	.250
241	509	502		4122	62889	7089	55754	46	604	30	300	186	17	28		43		92		92	50	5	8	38	.259
320	487	487		1216	50679	38274	12402	3	689	243	318	72	49	7				92		92	46	35	8	88	.184
302	489	505		1713	81372	64194	17164	14	626	147	306	123	2	34	12	1		92		92	49	24	8	4	.323
302	497	503		3717	49223	9129	40050	44	554	43	333	132	16	30		2	2	91		92	60	8	8	35	.222
316	487	502		2966	42561	11797	30274	490	698	140	296	203	9	38		11		93		93	42	20	7	19	.150
302	492	499		2534	40716	14577	26089	50	585	65	333	138		27	15	5		93		93	57	11	7		.172
241	505	502		9391	90091	14459	75606	26	532	57	264	175	1	36			171	70	24	93	50	11	7	2	.417
302	491	500		3089	43722	12507	31215		588	66	350	130	3	38			39	87	6	93	59	11	7	8	.184
312	492	498		3277	61417	27303	34104	10	650	148	342	110	4	41		4		93		93	53	23	7	10	.234
312	494	477		4264	73033	28955	44078		650	151	272	153	27	16		32		93		93	42	23	7	63	.276

MODERATELY DEVELOPED

OBSERVED
DEVELOPMENT

A21

EXHIBIT 3

PAGE 9

1970 LAND USE FILE

PER CENT DEVELOPED

				PER CENT DEVELOPED		1970 LAND USE FILE												PERCENT OF TOTAL										PAGE 9	
ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES								AREA		LAND						OPEN REC	FAR			
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REG	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN						
307	488	491		5038	70354	19258	51060	36	621	119	350	116	34	2			94		94	56	19	6	94	.276					
320	491	485		3452	53469	14756	35690	23	577	80	315	147	13	23			94		94	54	14	6	37	.214					
302	492	497		2526	35694	9973	23551	170	624	260	210	68	1	36		49	7	93	1	94	34	42	6	2	.140				
241	507	504		6943	73011	6935	65992	84	638	17	386	199	24	13			94		94	60	3	6	66	.279					
316	490	500		2976	53700	23579	30121		643	130	326	145	32	9			94		94	51	20	6	78	.205					
302	494	504		2910	56664	25424	30975	265	581	170	228	118	27	8		30	53	86	8	94	39	29	6	78	.238				
307	487	490		1867	34273	15439	18770	64	669	82	451	94	18	20		3	1	94		94	67	12	6	48	.125				
320	492	486		3329	69988	34650	34518	720	579	185	246	117	25	4		3		95		95	42	32	5	87	.292				
316	490	499		1838	50979	31533	19360	86	729	213	298	107	11	22		78	18	93	2	95	41	29	5	34	.168				
243	498	488		5215	62735	13393	49320	22	591	72	353	134	2	30				95		95	60	12	5	5	.258				
302	439	503		2739	66749	36863	28869	1017	499	156	209	108	15	10			88	81	15	95	42	31	5	61	.323				
203	504	508		8063	183660	9980	173600	80	543	42	270	203	4	24				95		95	50	8	5	15	.818				
320	491	482		2805	55357	26199	28970	198	641	130	336	141	10	19	5	1	4	94	1	95	52	20	5	29	.209				
241	503	507		13130	172638	26658	141667	4313	593	50	233	218	2	28			61	95		95	39	8	5	6	.704				
241	505	499		7454	81077	12439	68584	54	704	47	255	203	2	31			167	95		95	36	7	5	5	.277				
241	504	502		4519	46137	9247	36812	78	676	321	165	153	7	29				95		95	24	48	5	20	.166				
302	497	502		5830	79279	18186	60539	554	616	81	305	122	7	21			79	95		95	50	13	5	26	.310				
302	497	504		5264	64348	7451	56823	74	703	80	445	151	7	19			2	96		96	63	11	4	27	.218				
302	489	504		2794	55730	25623	30075	32	629	116	361	126	14	9			3	96		96	57	18	4	61	.211				
302	491	503		4848	69326	19491	49835		592	103	363	105	5	17				96		96	61	17	4	22	.279				
312	495	482		1936	34511	13954	25397	160	400	150	168	62	1	8	8	3	139	71	26	96	42	38	4	5	.207				
302	493	504		2500	90330	62304	27109	917	684	332	188	124	11	19			9	93	2	96	27	49	4	38	.317				
320	488	484		2732	46499	18162	28212	125	644	113	406	97	7	19			2	96		96	63	18	4	27	.173				
241	509	500		11920	127566	21563	105958	48	579	79	262	217	6	14				96		96	45	14	4	31	.524				
241	509	504		6597	73412	9242	63996	174	667	57	331	252	2	25				96		96	50	8	4	8	.263				
320	490	486		3931	53870	12113	41757		650	87	395	138	11	18				96		96	61	13	4	38	.199				
241	509	501		7955	104723	23563	81143	17	722	153	309	226	7	19				96		96	43	21	4	27	.345				
302	491	505		2107	47073	24877	21533	663	729	219	330	142	1	29			8	96		96	45	30	4	3	.155				
302	492	503		3438	47629	10674	36775	180	529	42	349	121	8	9				97		97	66	8	3	45	.214				
302	492	504		3169	66848	31409	35439		649	186	300	145	3	16				97		97	46	29	3	15	.243				
302	488	504		2335	70739	45920	24471	348	586	160	269	132	1	18			6	88	9	97	46	27	3	5	.287				
309	492	496		5221	79364	24793	54571		680	117	319	158	4	14			68	97		97	47	17	3	21	.275				
302	490	503		4678	67498	17598	49791	109	612	100	399	93	17				2	95	2	97	65	16	3	100	.261				
316	490	501		5681	105236	46949	57894	393	620	188	270	138	17	4			2	92	4	97	44	30	3	79	.404				
302	492	501		4046	61724	19340	42381	3	588	79	352	135	6	12			3	97		97	60	14	3	31	.249				
316	487	501		1859	35463	16184	19279		605	129	307	150	10	8				97		97	51	21	3	57	.139				
307	488	492		2883	54117	24015	30088	14	653	57	456	124	6	10				97		97	70	9	3	39	.195				
302	491	504		2514	61512	35146	26326	40	564	210	255	80	13	5				97		97	45	37	3	71	.259				
307	488	490		2154	24984	3384	21600		553	54	365	118	14	2				97		97	66	10	3	86	.107				
316	487	500		1688	19524	2062	17429	33	667	23	464	158	1	12			9	98		98	70	3	2	6	.068				
320	493	485		2	17352	17237	25	90	555	461		32			2	50	58	89	10	98		83	2		.073				
241	503	504		6520	90479	16625	73838	16	656	59	367	216	1	14				98		98	56	9	2	5	.324				
320	491	484		3237	45629	12349	33280		585	88	357	126	11	2				98		98	61	15	2	82	.183				
302	492	505		4766	70322	19896	50393	43	572	112	339	108	1	12				98		98	59	20	2	6	.289				
302	491	502		1835	105150	85181	19959	10	583	288	183	39	2	2			69	96	3	99	31	49	1	51	.416				
302	492	502		3104	41047	9253	31737	57	622	72	412	130	6	2				99		99	66	12	1	70	.154				
307	487	496		3860	68032	27312	40706	14	697	123	453	109	3	8			1	99		99	65	18	1	25	.228				
302	494	505		3566	43259	7061	36164	34	656	65	440	141	6	2			3	99		99	67	10	1	77	.153				
316	486	505		4546	109681	61730	47119	832	578	216	212	132	2	6			11	93	6	99	37	37	1	25	.441				

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			PER CENT DEVELOPED	1970 LAND USE FILE										PERCENT OF TOTAL													PAGE 10
ST	SQ	MI	OBSERVED DEVELOPMENT	HSNG	FLOOR X 100			LAND IN ACRES			AREA			LAND			OPEN			FAR							
CTY	X	Y		UNITS	TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT		DEV	RES	NRE	OPN	REC		
203	503	505		2759	35755	3433	32268	4	504	49	93	42	83	241			166	27	25	36	18	10	64	26	.455		
224	503	493		14472	152421	32132	118151	2267	945	57	203	193	481	9		3	48	48	48	21	6	52	98		.769		
231	500	500		30031	548025	109874	437282	869	676	47	157	116	354	1		2	48	48	23	7	52	100	3.917				
231	500	501		29491	448877	85520	363357		674	54	163	118	334	4			50	50	24	8	50	99	3.072				
224	507	491		9353	93731	9541	84134	56	947	33	297	176	426	15			168	45	15	53	31	3	47	97	.426		
224	505	488		4952	51332	7895	43397	50	542	90	107	88	52	205			36	49	6	53	20	17	47	20	.414		
231	501	502		10381	142045	58414	82858	773	594	198	72	60	225	39			11	55	2	56	12	33	44	85	.987		
309	498	493			3580	3490		90	605	306		38	261				14	56	2	57		51	43	150	.024		
203	502	503		74	26372	25904	468		198	88		27	46	36			504	16	72	58		45	42	56	.523		
224	508	496		5954	64940	22120	42776	44	603	80	121	157	29	216			59	59		59	20	13	41	12	.417		
309	493	494		663	84635	77722	6913		713	346	42	34		146	144		54	55	7	59	6	49	41		.460		
307	494	492		6	35071	34544	60	467	612	270	1	68	11	241		21	21	57	3	59		44	41	4	.224		
224	506	488		9710	137376	15331	116411	5634	503	88	103	128	90	94			70	56	12	63	21	17	37	49	.988		
224	508	490		3431	35503	4655	30824	24	472	64	104	133	96	75			366	36	44	64	22	14	36	56	.271		
241	506	503		1448	41331	23821	16930	580	418	132	40	94	9	143			28	60	6	64	10	32	36	6	.357		
203	501	503		11532	137134	40495	95894	745	564	156	97	118	171	22			277	44	33	66	17	28	34	89	.847		
320	494	488		666	65929	59139	6790		732	373	28	69	1	54	191	14		66		66	4	51	34		.312		
231	499	506		23135	271789	51967	219728	94	606	85	162	160	164	34			58	61	9	67	27	14	33	83	1.529		
309	496	491		1914	24746	5336	19410		303	89	80	39	94	1			385	30	56	69	27	29	31	99	.272		
231	499	505		27272	312991	75888	233604	3499	569	82	140	179	126	40		2	37	66	6	71	25	14	29	76	1.782		
203	506	509		1346	16749	3964	12444	341	288	55	99	50	3	81			34	63	11	71	34	19	29	4	.188		
241	509	498		8631	113215	33439	79323	443	819	75	289	226	208	21				72		72	35	9	28	91	.441		
231	500	502		36043	405343	92407	312489	447	633	79	224	150	171	9				72		72	35	12	28	95	2.055		
309	495	495			21131	20131		1000	561	349		9		100	51	51	61	66	10	73		62	27		.119		
203	501	506		27151	250534	56199	193527	808	619	103	168	183	152	13				73		73	27	17	27	92	1.266		
312	494	476		814	27991	19031	3790	170	419	220	45	39	3	102	7	3	256	45	38	73	11	53	27	2	.210		
307	495	495		6126	93035	31395	61600	40	737	133	263	124	146	35				74		74	38	19	26	81	.406		
309	496	495		3153	73793	39697	32206	1890	575	267	84	59	18	75	53	19	64	67	10	74	15	46	26	12	.395		
320	493	488		2406	160605	70167	24193	245	700	302	122	95	4	141	33	2		74		74	17	43	26	2	.443		
320	494	490			48129	48129			579	405		31		143			58	69	9	75		70	25		.253		
307	494	494		186	44289	38108	2084	4097	533	221	7	109		82	38	76	114	64	18	77	1	41	23		.246		
224	507	493		11383	167852	6171	100649	1032	646	52	248	197	5	144			13	75	2	77	38	8	23	3	.498		
309	497	491		4285	57294	13618	43334	342	605	103	163	86	1	41	88	118	55	72	8	78	28	17	22		.277		
307	494	491			51805	50443		1362	626	365		111		137			12	57	72	8	78		58	22	.243		
243	497	488		3251	54140	20633	32184	1323	483	129	174	85	21	73			149	61	24	80	36	27	20	23	.320		
203	503	506		12371	117923	19430	98479	8	649	73	270	192	8	106				82		82	42	11	18	7	.506		
203	503	504		45	11595	11370	210	15	179	115	1	30	2	31			468	23	72	82	1	64	18	5	.182		
224	505	487		4806	41097	7515	33060	522	240	23	111	65	20	20			81	62	25	83	46	10	17	51	.472		
320	493	487		6003	95061	31614	61169	2278	679	115	265	151	68	44		36		84		84	39	17	16	61	.385		
309	496	492		1852	28386	8272	19669	445	224	65	69	41	32	5		12	414	29	65	84	31	29	16	87	.348		
224	507	494		6849	78633	19529	59012	92	619	107	222	184	2	98		6		84		84	36	17	16	2	.348		
307	489	495		3942	91328	51092	40171	65	641	188	272	84	90	6		1		85		85	42	29	15	93	.385		
231	499	507		20129	190763	41925	148549	289	482	171	119	117	27	48			58	75	11	85	25	36	15	36	1.075		
309	496	489		3445	48244	11806	36031	407	304	55	131	72	40	5			376	38	55	85	43	18	15	89	.429		
224	507	495		12737	144839	42200	101205	1484	622	129	183	211	15	79				85		85	30	21	15	16	.630		
241	503	502		7414	74943	20082	54852	9	476	133	156	121	5	61			87	73	15	86	33	28	14	8	.420		
224	502	495		12747	347533	235862	132702	8969	589	169	120	211	59	24		5		86		86	20	29	14	71	1.577		
307	491	490		8341	98732	13883	84819		589	48	317	143	77	3			33	82	5	86	54	8	14	96	.445		
320	494	487		4127	73263	31619	41603	41	587	266	137	100	10	73		1	51	79	8	86	23	45	14	12	.334		
224	504	493		17945	231421	20739	209054	1628	437	35	220	126	45	11				87		87	50	8	13	80	1.395		
224	502	489		12744	147750	13657	117756	16337	609	43	189	175	42	35		124	29	83	5	87	31	7	13	54	.639		
203	502	507		13290	141609	25596	116005	8	518	163	183	164	41	26		1		87		87	35	20	13	61	.721		
224	507	489		15075	137313	17666	119484	163	647	73	265	231	57	20			186	68	22	88	41	11	12	74	.554		

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ORIGINAL PAGE IS
OF POOR QUALITY

EXHIBIT 3

PAGE 11

PER CENT DEVELOPED

LAND USE FILE

OBSERVED
DEVELOPMENT

WELL DEVELOPED

ST CTY	SO X	MI Y	OBSERVED DEVELOPED	HSNG UNITS	FLOOR X 100			LAND IN ACRES							PERCENT OF TOTAL										FAR
					TOTAL	NRS	RES	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC		
309	492	494		713	133130	61082	72981	67	557	156	214	123	51	16		1	29	84	5	88	38	28	12	77	.624
302	493	505		2152	74042	49672	23088	1282	500	217	140	81	45	9		7	47	81	9	89	28	43	11	83	.382
224	503	498		6456	92246	49232	42741	273	576	305	73	137	15	42			83	79	13	90	13	53	10	26	.407
241	514	510		14936	128651	22890	105754	7	619	81	249	229	4	55				90		90	40	13	10	6	.528
309	498	491			17800			17800	200	6		3		21		171	401	30	67	90		3	10		.228
320	491	489		3036	58819	26908	30973	941	631	101	285	107	51	12		75		90		90	45	16	10	80	.238
307	483	493		6651	106760	39445	67269	46	644	150	277	155	61	1				90		90	43	23	10	98	.421
224	507	492		8035	88964	11085	77432	447	617	52	307	204	20	34				91		91	50	8	9	37	.363
241	505	500		13782	160736	35858	124579	299	666	107	281	218	8	53				91		91	42	16	9	13	.609
241	505	498		13582	154430	24328	130035	67	691	106	287	191	8	46		54		92		92	42	15	8	15	.556
241	504	499		2700	75080	53008	21871	201	582	182	78	108	2	44		159		92		92	13	31	8	4	.321
320	490	489		2646	78056	50494	27562		661	274	219	114	45	8		1		92		92	33	41	8	85	.295
203	512	509		10248	102573	13517	89056		637	74	309	200	10	44				92		92	49	12	8	18	.404
241	516	498		8879	100691	21443	79117	131	630	94	192	143	5	44		152		92		92	30	15	8	10	.358
307	495	490			56102	56102			324	288		9		27			304	47	48	92		89	8		.434
309	499	490			73771	73771			314	236		6		24			48	282	49	47	92		75	8	.585
241	503	500		17789	207348	64776	141173	1399	789	186	225	206	13	51		107		92		92	29	24	8	20	.657
224	506	496		12947	150919	50984	99812	123	543	138	168	192	5	41				92		92	31	25	8	11	.696
241	508	497		10370	98451	15200	83128	123	686	86	261	277	2	50		10		92		92	38	12	8	5	.357
309	498	500		6826	97696	25350	72248	98	344	166	90	63	11	12		2	353	46	51	93	26	48	7	48	.699
224	506	493		7755	93671	23225	70287	161	589	106	257	184	10	33				93		93	44	18	7	23	.394
307	490	494		8847	120955	30919	90017	19	617	98	351	114	35	9		10		93		93	57	16	7	80	.484
309	497	500		10854	176105	62199	112937	969	652	161	245	152	20	27		47		93		93	38	25	7	42	.669
224	506	489		13496	141884	27118	114857	9	654	168	246	193	5	42		1		93		93	38	26	7	10	.537
309	495	488		1087	29786	18409	11377		221	123	40	42	15				402	33	64	93	18	56	7	98	.332
241	509	499		8353	99839	23190	76639	10	648	94	280	230	5	39				93		93	43	14	7	12	.380
224	506	495		21529	253706	56258	195477	1971	646	95	294	214	16	28				93		93	46	15	7	36	.967
307	490	492		10334	137256	32356	104866	34	632	82	249	161	30	6		194		94		94	39	13	6	84	.529
241	507	503		20407	242425	52516	189134	775	622	122	278	180	7	33		1		94		94	45	20	6	18	.957
241	506	500		17984	190881	22288	167945	648	665	83	292	251	8	32				94		94	44	12	6	20	.701
320	492	487		7172	129899	52437	76787	675	633	173	295	123	15	22		4	2	94		94	47	27	6	40	.501
241	507	500		21548	243530	20498	222931	101	644	64	340	218	7	34				94		94	51	10	6	17	.899
241	506	501		15561	174036	32443	141492	101	601	83	274	208	8	28				94		94	46	14	6	22	.707
224	505	489		14573	124851	15469	108644	738	583	59	302	185	14	22				94		94	52	10	6	40	.524
224	506	494		16874	188698	36444	152254		660	80	327	220	2	30				95		95	50	12	5		.690
307	490	490		6656	105243	38102	67051	90	645	153	290	167	30	5				95		95	45	24	5	86	.396
224	504	494		23558	241257	45460	192621	3176	546	95	247	176	3	22		3		95		95	45	17	5	13	1.065
309	497	499		11381	178949	60021	118506	422	613	185	228	141	18	10		30		95		95	37	30	5	64	.703
224	507	496		15378	176060	40955	135056	49	643	89	288	232	8	25		1		95		95	45	14	5	25	.663
309	497	492		5374	81476	23478	56668	1330	625	222	156	124	7	23		93		95		95	25	36	5	22	.314
316	490	502		6871	184463	113826	70182	455	610	267	195	112	21	11		4	31	90	5	95	32	44	5	65	.733
224	505	491		14113	148002	18940	128954	108	623	62	308	202	8	24		19		95		95	49	10	5	25	.575
307	491	496		4985	90876	39484	51236	156	610	160	287	130	22	6		6	37	90	6	95	47	26	5	80	.358
307	489	492		8183	94514	12548	81952	14	638	56	375	172	28	6		2		95		95	59	9	5	83	.359
320	493	486		1828	64613	45550	18940	123	565	252	81	179	20	8		25		95		95	14	45	5	71	.276
224	506	492		13273	145867	16107	129760		636	42	361	210	7	16		1		96		96	57	7	4	30	.546
203	503	507		18337	115933	29950	85983		552	102	249	177	2	22				96		96	45	18	4	9	.504
224	503	490		14225	152502	20790	131661	45	622	57	327	213	18	7				96		96	53	9	4	71	.586
320	492	488		6747	96695	26537	69685	423	612	132	345	109	5	18		2		96		96	56	22	4	23	.377
309	496	473		4060	109649	59576	43184	6869	585	284	194	67	13	8		19	119	80	17	96	33	49	4	63	.446
307	491	497		3856	62402	21906	40336	160	587	115	301	139	8	19		5	27	91	4	96	51	20	4	29	.255
224	505	490		18320	182078	23510	158388	180	636	65	339	208	13	10				96		96	53	10	4	55	.682

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1970 LAND USE FILE

PER CENT DEVELOPED

			PER CENT DEVELOPED	1970 LAND USE FILE																	PAGE 12				
ST CTY	SQ X	MT Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES							PERCENT OF TOTAL							OPEN REC	FAR	
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE			OPN
319	496	490		4145	62557	19833	42646	78	287	63	129	85	12				1 405	40	59	96	45	21	4	99	.523
241	504	501		17949	201748	26232	175375	91	609	98	286	203	4	17				97		97	47	16	3	20	.789
203	502	508		17224	172548	31320	141216	4	586	100	257	213	1	15				97		97	44	17	3	9	.695
316	489	502		7556	121965	44656	77232	67	620	119	332	153	9	8				97		97	53	19	3	52	.464
316	485	504		6354	115496	43945	69822	1729	593	97	328	147	10	6			4	97		97	55	16	3	63	.460
307	491	495		6534	92673	25694	66957	22	529	109	285	116	6	12			63	86	11	97	54	21	3	31	.417
307	495	491			31897	30619		1278	263	217		23			9	14	320	44	55	97		82	3		.288
224	506	490		15228	178258	24388	153836	34	614	58	350	190	8	7				97		97	57	9	3	55	.684
224	505	494		15525	216094	68757	147286	51	634	155	270	187	9	13				97		97	43	24	3	39	.810
309	498	499		3902	55696	13427	40250	2019	313	163	105	29	5	4			7 429	41	58	97	34	52	3	56	.420
316	485	504		9851	219632	118589	100819	224	627	241	194	174	16	3			1 15	95	2	97	31	38	3	83	.829
224	502	490		19004	203914	23519	180389	6	640	53	360	204	12	10				97		97	56	8	3	54	.758
309	497	490		4435	73576	27165	46258	153	558	281	135	78	3	13			47 60	88	10	97	24	50	3	20	.312
241	503	499		9737	147339	78237	69055	77	627	152	112	212	2	16			134	97		97	18	24	3	12	.555
224	507	490		15505	172382	26590	145763	29	633	68	353	199	4	9				98		98	56	11	2	31	.338
241	512	502		6867	77815	22245	55570		563	355	122	74		12			6	97	1	98	22	63	2		.324
241	505	501		24898	227966	28306	199660		581	77	307	188	1	8				98		98	53	13	2	10	.915
320	491	487		4491	58418	12514	45859	45	581	60	390	122	1	8				98		98	67	10	2	7	.234
309	497	489		4807	83976	41300	42145	431	578	342	121	94	4	8			9 72	87	11	98	21	59	2	30	.340
224	505	492		18865	224553	30663	193886	4	649	78	359	200	1	12				98		98	55	12	2	4	.809
319	498	492			4889	4210		679	414	302		10		6			95 170	70	29	98		73	2		.028
309	498	498		790	55350	46032	8386	932	407	295	39	63	3	3			4 366	52	47	98	10	73	2	52	.317
309	498	494		2441	61431	28072	33290	69	589	435	63	67	6	6			11 15	96	2	98	11	74	2	49	.244
224	506	491		14863	172494	12499	159986	9	660	46	393	210	2	8				98		98	60	7	2	22	.610
307	489	494		7241	88019	15015	72930	74	648	101	382	152	9	3				98		98	59	16	2	77	.318
241	509	498		10391	119861	24630	95256	5	659	67	342	238	2	11				98		98	52	10	2	16	.426
316	487	503		4878	111535	61323	50122	90	565	167	219	174		5				99		99	39	30	1	7	.457
316	487	504		7773	117274	32784	81726	2764	627	127	309	185		4			3	99		99	49	20	1	11	.432
241	503	501		14824	160331	41302	118942	87	715	126	254	188	8				140	99		99	35	18	1	100	.521
307	488	494		6304	89199	23127	65588	484	638	108	329	147	8	1			45	99		99	52	17	1	85	.326
136			75																						
203	501	507		22251	211098	49254	161419	425	766	115	174	186	277	14				62		62	23	15	38	95	1.022
231	501	498		8302	119583	57054	62044	485	306	101	37	77	6	84			377	32	55	70	12	33	30	6	1.274
307	492	490		1077	85614	73612	12002		641	332	38	84	112	20	51		4 50	66	7	72	6	52	28	61	.429
224	501	495		12759	221914	152228	69457	229	449	147	67	120	37	78			163	55	27	74	15	33	26	32	1.523
203	502	505		21737	253762	73294	180333	435	654	161	143	184	84	82			9	74	1	75	22	25	25	50	1.194
203	500	504		22917	256984	75562	176800	4622	603	174	113	171	60	83			2 35	72	5	76	19	29	24	42	1.283
307	494	493		661	72810	65823	6912	75	687	377	24	119	35	126			5	76		76	3	55	24	22	.318
307	492	491		1629	85940	69253	16410	277	662	333	39	134	1	92	61		1	77		77	6	50	23		.388
231	501	501		26855	276043	46078	229739	226	364	66	132	84	24	59			504	32	58	77	36	18	23	29	2.258
231	499	504		26781	327053	36903	274715	15435	474	50	169	144	90	14			7 51	70	10	78	36	11	22	87	2.033
309	495	494		13	61130	58993	130	2007	543	333	1	71		99	21		17 109	65	17	78		61	22		.332
231	499	502		35736	367497	96517	270900	80	447	82	137	133	93	1			8	77	2	79	31	18	21	99	2.393
307	491	494		10055	161605	59265	102250	90	627	153	262	91	116	5			34	77	5	81	42	24	19	96	.733
231	499	503		22322	320597	145187	175360	50	475	130	128	131	77	10			20	78	4	82	27	27	18	89	1.895
241	505	503		1075	4534	1118	3378	38	79	33	16	15		13			239	20	75	82	20	42	18	4	.161
224	502	493		8679	124830	63645	58152	3035	654	268	98	161	64	43			10	82	2	83	16	42	17	60	.543
224	502	497		7034	142384	88742	53345	297	476	205	63	128	20	59			169	62	26	83	13	43	17	25	.824
231	500	495		396	722041	709209	11784	1048	427	227	7	108	25	49			10 313	48	42	83	2	53	17	33	4.703
231	500	503		32955	411125	128390	282485	250	679	145	226	194	32	82			16	81	2	83	33	21	17	28	1.670
231	499	501		43725	500373	61713	438293	367	462	47	194	142	57	23			1	83		83	42	10	17	71	2.998

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		OBSERVED DEVELOPMENT	PER CENT DEVELOPED				1972 LAND USE FILE										PERCENT OF TOTAL										PAGE 13	
ST CTY	SQ MI X Y		HSNG UNITS	TOTAL	FLOOR X NRS	100 RES	SPEC	TTL	NRS	RES	ST	PEC	VAC	SWP	SPC	MAT	DEV	MAT	DEV	RES	NRE	OPN	REC	FAR				
224	503 494	OBSERVED DEVELOPMENT	21293	261753	51310	210385	58	557	66	243	159	81	4				85		85	45	12	15	96	1.271				
224	501 493		3378	91129	62981	27124	24	444	249	61	70	38	27			46	77	9	85	14	56	15	59	.546				
309	495 493			18815	18805		10	173	135		6		22	4	5	374	27	68	85		78	15		.296				
203	500 505		33666	357373	56504	300362	507	615	109	228	194	53	30				86		86	37	18	14	64	1.545				
241	502 499		1971	222695	208593	14002	10	685	370	24	210	3	77			16	86	2	88	4	54	12	4	.845				
231	501 497		47756	433735	92612	340752	421	580	90	269	151	55	14			80	77	12	88	46	15	12	79	1.952				
224	501 494		5352	95857	51987	40166	3704	271	105	56	78	19	13			210	50	44	88	21	39	12	59	.921				
241	502 501		19330	184926	30674	154852		653	89	283	210	46	26				89		89	43	14	11	64	.731				
231	499 500		39699	491284	133065	358045	174	544	216	149	116	23	39				89		89	27	40	11	37	2.342				
203	502 506		24611	224192	32400	191788	4	684	136	233	237	17	62				89		89	34	20	11	21	.850				
203	501 504		28353	311362	95492	215841	29	594	147	206	175	43	22				89		89	35	25	11	66	1.355				
312	495 476		2233	28477	5465	22554	458	247	47	127	43	23	5			3 252	44	50	89	52	19	11	83	.297				
231	501 499		23784	284565	105594	177926	1045	379	164	71	104	5	35			169	62	31	90	19	43	10	12	1.925				
203	500 506		38614	372733	53982	318703	48	689	130	259	229	49	23				90		90	38	19	10	68	1.386				
231	501 500		25806	393456	150198	242501	757	476	233	101	97	23	23			87	77	15	90	21	49	10	51	2.096				
307	491 493		7818	226462	117900	107200	1302	644	234	187	161	39	19			4 3	90	1	91	29	36	9	67	.887				
224	505 495		22412	217187	38635	178093	459	625	86	281	204	38	16				91		91	45	14	9	70	.873				
307	492 492		9334	220193	121476	97742	975	649	264	162	170	9	43			1	92		92	25	41	8	17	.847				
203	500 508		25861	243516	36379	203008	4129	687	243	195	188	7	50			6	92		92	28	35	8	12	.886				
231	501 496		26565	348206	141988	205940	278	502	144	155	165	31	7			82	79	14	92	31	29	8	82	1.223				
224	502 492		5478	178491	109086	46116	23289	630	262	80	132	28	24			104 25	88	4	92	13	42	8	54	.708				
241	504 498		1700	112355	100415	10346	1594	558	358	31	94	7	37			30 44	85	7	92	6	64	8	16	.502				
224	502 496		4446	123729	51639	38093	33997	536	75	46	91	14	25			286 50	85	9	93	9	14	7	36	.571				
309	497 497		14752	197859	46192	151657	10	679	137	326	171	30	15				93		93	48	20	7	67	.716				
224	504 491		15553	180751	31037	149571	143	619	66	329	183	6	36				93		93	53	11	7	14	.719				
224	502 494		18144	239585	84161	153650	1774	645	178	232	187	15	33				93		93	36	28	7	31	.921				
224	503 496		17642	246751	121024	124104	1623	621	185	177	221	13	23			3	94		94	29	30	6	36	.967				
224	502 491		14439	224408	56675	124629	43104	612	125	213	195	12	26			42	94		94	35	20	6	31	.897				
224	504 497		13537	201326	102956	97808	562	630	270	144	176	12	29			9	92	1	94	23	43	6	29	.783				
224	503 497		20303	229914	65973	163360	576	674	160	231	241	20	23				94		94	34	24	6	47	.835				
231	499 498		14224	405403	317745	87080	578	531	301	70	129	3	28			3	94	1	94	13	57	6	9	1.861				
224	502 498		9881	191300	108943	81950	407	643	306	126	170	19	22			29	90	4	94	20	48	6	46	.730				
203	500 507		29564	315744	51875	263804	65	577	122	228	194	23	10				94		94	39	21	6	69	1.332				
309	497 498		11585	181837	62265	118973	601	653	217	227	157	9	29			15	94		94	35	33	6	23	.678				
309	497 494		11906	174799	55080	119406	313	590	152	277	128	10	22			1	95		95	47	26	5	30	.718				
307	493 492		4256	91854	47232	44099	523	577	308	119	121	13	14			1	95		95	21	53	5	48	.383				
309	497 496		11198	156583	46735	114115	1763	547	101	254	129	23	7			33	95		95	46	19	5	78	.695				
224	504 489		15721	147185	22070	125110	5	575	55	294	199	14	14				95		95	51	10	5	49	.617				
309	497 493		10171	131720	29166	102537	17	581	134	279	121	13	14			19	95		95	48	23	5	47	.546				
224	503 495		20987	265296	89056	175398	842	645	156	247	211	4	27			1	95		95	38	24	5	13	.992				
231	500 496		12262	686057	606229	74626	5202	588	295	53	209	6	25				95		95	9	50	5	20	2.829				
307	491 492		13187	245666	74985	170500	181	627	174	259	162	1	31				95		95	41	28	5	5	.948				
309	498 495		11568	299963	177845	121250	868	700	353	130	179	17	20				95		95	19	50	5	46	1.039				
309	497 495		15467	276631	113751	159992	2888	643	224	244	134	11	23			8	95		95	38	35	5	33	1.042				
224	503 491		19751	204027	37276	166713	38	600	74	316	187	2	21				96		96	53	12	4	7	.812				
231	499 499		21885	406799	268189	136242	2368	547	314	80	130	2	20			1	96		96	15	57	4	8	1.779				
224	504 496		19705	229104	57882	168717	2505	639	101	304	207	11	13			3	96		96	48	16	4	47	.855				
203	501 505		29294	461012	85425	370848	4739	643	159	254	200	7	22			1	96		96	39	25	4	24	1.722				
231	500 497		47845	872890	503504	364520	4866	639	203	190	216	17	11			2	96		96	30	32	4	59	3.282				
307	490 493		6568	116944	37321	77680	1943	566	87	227	130	7	14			102	96		96	40	15	4	32	.492				
307	493 493		5326	133518	78178	53650	1690	557	285	125	114	15	7			11 47	89	8	96	22	51	4	70	.573				
224	505 493		21425	204631	36615	167707	309	761	86	289	216	9	11			151	97		97	38	11	3	46	.633				

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		OBSERVED DEVELOPMENT		PER CENT DEVELOPED				1970 LAND USE FILE														PERCENT OF TOTAL				PAGE 14	
ST	SQ MI			HSNG	FLOOR X 100				LAND IN ACRES							AREA		LAND		OPEN							
CTY	X	Y	DEVELOPMENT	UNITS	TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC	FAR		
241	502	500	INTENSIVELY DEVELOPED	13946	182499	84522	95238	2738	612	219	191	182	4	13		4		97		97	31	36	3	22	.703		
307	489	493		9983	145791	44034	101660	97	693	161	322	191	13	6				97		97	47	23	3	68	.496		
307	492	493		1801	292768	271646	19531	1591	595	384	42	128	7	11		24	58	88	9	97	7	65	3	41	1.165		
231	500	498		32158	1325419	1125541	194322	5556	631	302	90	217	8	11		3		97		97	14	48	3	44	4.969		
224	504	495		26374	286550	66115	218592	1843	666	106	316	219	13	10		2		97		97	47	16	3	56	1.023		
231	500	499		21340	1561755	1420555	140375	825	613	319	58	218	6	12				97		97	9	52	3	33	6.018		
224	505	497		24929	248991	40123	208664	204	610	92	305	197	6	10				97		97	50	15	3	36	.961		
309	498	497		11810	243453	123571	119735	147	629	343	123	141	18	4		1	14	94	2	97	19	54	3	84	.920		
224	504	492		20066	206586	33598	173384	4	608	68	320	210	2	7				98		98	53	11	2	26	.794		
224	505	496		22540	254689	47467	207074	148	683	84	362	223	6	8				98		98	53	12	2	43	.874		
231	499	497		9844	217206	149870	67059	277	277	154	45	73	2	3			289	48	51	98	16	55	2	46	1.830		
309	498	496		4642	196785	135442	61300	43	648	476	60	96	3	12		1	63	89	9	98	9	73	2	19	.714		
224	504	490		16993	185096	32997	152084	15	626	69	349	199	2	7				99		99	56	11	1	19	.688		
307	491	491		11508	167718	43258	124460		590	90	331	164	2	3				99		99	56	15	1	45	.659		
307	490	491	10389	147869	40639	104454	2776	636	138	313	175	4	2		4		99		99	49	22	1	62	.539			
241	504	503		11400	11400			206	198		7					348	37	63	100		96			.127			

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OF POOR QUALITY

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EXHIBIT 4

PAGE 1

TOTAL FLOOR SPACE

1970 LAND USE FILE

ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES							PERCENT OF TOTAL							OPEN REC	FAR	
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE			OPN
224	503	488		5					27			12	12	3			404	3	94	45			55	81	.000
224	502	488							21			10		11			844	1	98	48			52		.000
224	504	488							39			13		26			590	2	94	33			67		.000
203	506	508															463		100						.000
224	501	489							1			1					700		100	100					.000
243	498	478		1	44	40	4		42	19	13	3		8			507	6	92	82	31	45	18		.003
243	503	486			45	45			2				2				625		100	13		13	87	100	.360
243	499	479		12	124		124		23		4			19			310	1	93	16	16		84		.076
203	505	505		53	486	30	456		74	23	4	6	1	38			419	7	85	46	6	32	54	4	.033
312	496	475		63	1056	262	794		143	3	5			11	125		489	1	77	6	4	2	94	8	.294
309	499	493			1624	1284		340	105	54				50			537	8	84	52		52	48	99	.069
302	498	505		128	2022	568	1454		122	4	9	26	51	32			468	7	79	32	7	3	68	62	.119
224	504	487		539	2907	60	2847		28	1	14	5		8			418	4	94	71	52	2	29		.340
312	495	478		411	8175	3954	4209	12	317	277	24	13		2			195	61	38	99	8	87	1		.060
309	499	491			8450			8450	72			3				69	547	12	88	100					.269
203	505	508		1107	19211	428	9657	126	118	8	51	33	1	25			899	9	88	78	43	7	22	5	.256
224	501	492			16945	16945			111	110		1					506	18	82	100					.350
302	498	504		1002	17638	6257	11364	17	187	37	87	24	29	10			1567	20	75	79	46	20	21	74	.272
309	499	494			18990	13830		5160	280	252		4	24				362	40	56	91		90	9	100	.170
312	495	475		970	20511	5879	9820	4812	373	164	107	25	2	51		24	224	54	37	86	29	44	14	4	.147
224	501	490		2127	24229	1598	22631		177	12	47	48	56	13			191	29	52	61	26	7	39	81	.518
309	499	496		1	26682	26669	13		143	118		14		11			384	25	73	92		82	8		.463
302	498	503		1471	28525	12273	14965	1287	291	75	95	52	41	27			1468	29	62	77	33	26	23	60	.293
243	499	490		740	32437	25625	6812		113	47	17	20		28			407	16	78	75	15	42	25		.882
224	501	491		1022	35806	30556		5250	189	123		3		9		53	505	26	73	95		65	5		.458
309	498	501		2674	43611	15087	28524		242	115	83	24	18	1			392	35	62	92	34	48	8	95	.450
302	498	502		674	54266	47154	6784	328	318	184	57	29		46			2401	38	56	85	18	58	15		.459
309	500	494			67500			67500	165								165	370	31	69	100				.940
309	499	495		518	84361	71934	11560	867	231	185	11	25	1	7			3422	34	65	97	5	80	3	10	.869
312	495	477		3450	87611	51515	35870	226	410	175	157	73	2	2			1196	67	32	99	38	43	1	43	.495
30 W																									
302	495	501							458			21			437		86	4	16	4			96		.000
312	492	474							546			11				535	5	99	1	100					.000
302	493	497							667	1					655	12		2		2			98		.000
302	493	498							662	8					634	20	10	4	2	4		1	96		.000
224	509	495		5					819			27	758	33			71	3	8	3			97	96	.000
224	509	490							234			6	228				260	1	53	3			97	100	.000
224	509	493							395				395				124		24				100	100	.000
312	491	474							614			94				520		100		100					.000
312	491	472							607					97	510		102		14				100		.000
243	496	482		1	24		24		504	50		36	341	78			162	13	24	17		10	83	81	.001
224	509	494			62			62	108			7	100				591	1	85	7			93	100	.019
243	500	481		11	120	16	104		64	8	4	4	6	43			647	2	91	25	6	13	75	12	.017
243	495	485		4	170	92	78		831	548	12	25		246			53	66	6	70	1	66	30		.001
320	495	488		11	207	68	139		61	7	1			14	39		469	1	89	13	2	11	87		.060
224	509	491		34	220			220	417	125		14	45			233		89		89		30	11	100	.001
312	497	472			263	203		60	681	174		4	479			24	20	29	3	30		26	70	100	.003
302	494	497		14	269	93	176		499	5	1	60		9	418	6	67	13	12	14		1	86		.009
243	502	486			270	270			18	1		1	16				538		97	8		5	92	100	.431
243	502	487		14	290		83	207	108	5	1	5	74	23			388	2	78	10	1	4	90	76	.063

TOTAL FLOOR SPACE

1970 LAND USE FILE

ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES								PERCENT OF TOTAL								OPEN REC	FAR
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	MAT	DEV	RES	NRE	OPN			
203	505	509		18	300	43	225	32	87	1	1	84				440		84	2	1		98	100	.328		
243	497	482		82	397		307		305	16	7	17		264			13		13	2	5	87		.017		
312	496	470		34	353	8	345		717		40	10		651	15		7		7	6		93		.016		
309	494	498		19	367	128	239		440	6	2	44		5	370	13	165	11	27	15	1	1	85		.013	
243	501	483		45	397	16	381		92	22	4	3	21	43		474	5	84	31	4	23	69	33	.032		
241	509	487		85	468			468	267		12		15	240		158	3	37	5	5		95	6	.088		
224	509	492		11	489		489		374		2	4	92	2		274	76	63	16	75	1		25	98	.004	
230	508	507		41	491		491		17		16	2				430	4	96	100	89				.065		
312	495	470		3	700	12	38	650	558		1	15		132	91	319	8	59	1	60		40		.065		
241	509	506		24	735	44	691		29	1	16	13				318	8	92	100	53	4			.057		
312	492	473		39	832	12	820		678	7	18	9		76	276	292	158	39	19	48	3	1	52		.006	
243	497	477		102	848	109	739		202	4	25	11		162			241	9	54	20	13	2	80		.049	
320	487	480		84	929	34	848	48	572	1	102	10	269	183		7		21		21	18		79	59	.018	
243	495	480		29	992	898	94		248	81	11	5		151			334	17	57	39	5	33	61		.024	
243	496	480		245	1000	137	863		595	11	134	78		403				32		32	17	2	68		.012	
312	493	474		27	1114	776	338		246	15	19	4		124	84		318	7	56	15	8	6	85		.068	
320	494	489			1143	1143			593	106		38		191	257			24		24		18	76		.018	
243	496	479		79	1203	100	1103		634	8	66	157		404				36		36	10	1	64		.012	
243	495	479		133	1205	285	900	20	491	225	46	15	7	198			381	33	44	58	9	46	42	3	.010	
243	496	483		118	1261	56	1191	14	627	38	24	72	236	257			133	18	18	21	4	6	79	48	.022	
243	496	481		149	1385	237	976	172	472	16	60	75	121	200			69	28	13	32	13	3	68	38	.021	
302	494	499		42	1440	911	529		467	28	7	99		41	287	5	156	22	25	30	1	6	70		.024	
312	491	471		40	1536	571	501	464	551	2	1	4	26	78	437	5	40	2	7	2			98	5	.314	
243	499	480		190	1596	89	1410	97	232	1	22	37	8	164			223	13	49	26	10		74	5	.060	
312	494	474		93	1598	428	1160	10	502	87	45	25		155		190		69		69	9	17	31		.011	
243	499	485		60	1599	11	1511	77	506	124	23	92	34	76		157		78		78	5	25	22	31	.009	
243	498	484		77	1831	33	1765	33	642	56	41	43	375	127				22		22	6	9	78	75	.036	
307	486	490		127	1892	409	1447	36	592	1	50	17	384	140			1	11		12	8		88	73	.064	
312	498	471		137	1901	406	1495		523	6	108	30		380				27		27	21	1	73		.030	
312	491	473		1	1927	1704	20	203	604	105	2	16	6	87	221	166	33	45	5	48		17	52	2	.015	
241	509	489		576	2030		2030		155		42	4		109			675	6	81	30	27		70		.101	
312	495	471		18	2046	1866	180		630	61	25	16		379	122	28		21		21	4	10	79		.036	
243	495	486		35	2179	1994	185		497	15	8	78		396				20		20	2	3	80		.050	
312	493	473		185	2231	238	1993		540	3	31	11		298	197		79	7	13	8	6	1	92		.112	
312	498	472		132	2234	776	1458		616	19	88	28	177	302				22		22	14	3	78	37	.038	
243	497	481		269	2264	26	2238		379	2	62	21		294				22		22	16		78		.061	
243	497	483		15	2438	2438			965	564		21	198	182			10	60	1	61		58	39	52	.010	
312	490	472		69	2594	1710	851	23	634	81	18	22		235	239	39	64	23	9	25	3	13	75		.037	
309	496	497			2678	2678			584	170	2	20		151	225	19		36		36		29	64		.030	
230	508	509		229	2698	288	2410		440	1	276	37	21	77	27		260	45	37	72	63		28	17	.020	
203	506	506		104	3029	2766	249	14	53	31	2	4	1	13			2	7	91	75	5	59	25	4	.175	
313	499	470		177	3206	1637	2199		543	18	461	25		28	11			93		93	85	3	7		.015	
243	498	483		423	3271	434	2781	6	731	168	38	21	214	108		182		56		56	5	23	44	66	.018	
243	495	484		19	3388	3304	84		468	217	3	16		224	7		218	34	32	50	1	47	50		.033	
203	503	503		2	3600	3600			314	314							285	52	48	100		100			.026	
243	496	484		351	3828	706	3107	15	707	17	71	81	310	229			62	22	8	24	10	2	76	57	.052	
320	493	489		93	3839	2891	948		633	65	8	21	3	25	510			15		15	1	10	85	1	.093	
230	509	509		319	4113	256	3660	203	588	8	392	48	18	95	24		4	64	17	77	67	1	23	13	.021	
312	497	470		262	4316	1116	3200		634	8	57	26		544				14		14	9	1	86		.110	
312	497	473		337	4367	123	4244		678	92		57	117	1	411		35	21	5	22		14	78	22	.067	
320	486	480		401	4817	656	4161		733	2	402	46		283				61		61	55		39		.025	
312	492	475			4843	4843			695	162		8				8	517	7	98	1	99		23	1	.016	
312	488	480		347	4926	415	3605	906	748	19	214	32	119	344		20		38		38	29	3	62	26	.040	

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ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES								PERCENT OF TOTAL								FAR
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SNP	SPC	MAT	DEV	MAT	DEV	RES	NRE	OPN	REC	
243	497	484	OBSERVED DEVELOPMENT	529	5838	740	4290	8	412	25	80	25	11	271				32		32	19	6	68	4	.089
312	491	471		339	5326	1568	3718	40	666	14	143	67		317	125			34		34	21	2	66		.055
309	496	500		153	5431	3488	1920	23	606	76	6	31		17	465	9	27	20		4	20	1	13	80	.101
312	497	474		452	5543	953	4590		350	21	65	25		88	151		281	18	45	32	19	6	68		.114
241	509	488		998	5632		5125	507	194		90	14	12	78			71	39	27	53	46		47	14	.125
243	500	482		458	5728	2113	3304	311	609	36	28	22	492	31			247	10	29	14	5	6	86	94	.154
307	486	491		434	5852	1139	4613	100	666	47	160	44	374	12				42		42	24	7	58	97	.048
320	487	481		334	5875	2085	3790		374	9	220	26	87	28			3	69		69	59	2	31	75	.052
243	497	478		62	6060	4702	1258	100	666	410	39	42	4	171				74		74	6	62	26	2	.028
312	490	473		451	6123	1314	4786	23	604	23	103	44	3	311		120		48		48	17	4	52	1	.048
243	498	479	295	6155	3403	2610	142	521	25	68	34	180	214			90	21	15	24	13	5	76	46	.112	
312	497	471	431	6486	1611	4861	14	675	18	182	44	100	304	11	15	1	38		38	27	3	62	24	.057	
309	493	495		6640	6640			587	49		11		1	524	2		10		10		8	90		.247	
243	498	480	594	7274	1654	5620		733	84	112	119	6	412				43		43	15	11	57	1	.053	
307	486	492	565	7313	1521	5666	126	737	24	232	43	295	83			61	49		49	31	3	51	78	.047	
243	497	480	672	7377	59	7318		571	3	95	128		346				39		39	17		61		.075	
203	504	509	548	7400	3795	3605		520	7	32	85	371	24			249	16	32	24	6	1	76	94	.137	
312	494	475	426	7407	2628	4679	100	679	46	107	59	17	407			43	34	10	38	16	7	62	4	.066	
309	495	500	430	7477	2650	4765	62	538	25	98	23	3	18	338	2	118	24	19	29	19	5	71	1	.115	
224	508	489	933	7539	733	6150	656	146	8	33	21	24	60			413	11	74	42	22	6	58	29	.279	
307	486	499	613	7564	998	6556	10	558	24	136	56	175	58		109		58		58	24	4	42	75	.053	
320	486	481	557	7603	1911	5692		705	15	346	36		293		16		58		58	49	2	42		.042	
312	492	476	522	7619	2224	5350	45	645	126	76	87		181	46	128		65		65	12	20	35		.042	
307	486	496	533	7656	1741	5507	408	655	14	199	60	371	11				42		42	30	2	58	97	.064	
243	496	478	589	7862	3580	4236	46	557	57	95	60	22	322			71	34	11	38	17	10	62	7	.085	
312	496	470	403	7895	1836	5026	1063	750	29	115	36		450	93	27		28		28	15	4	72		.087	
312	494	473	670	8326	821	7145	360	617	15	112	32		381	16	62		36		36	18	2	64		.087	
243	496	486	523	8383	2679	5603	101	521	22	77	108	16	276		23		44		44	15	4	56	5	.084	
312	495	483	138	8388	6981	1427		509	341	19	16		131	2		181	55	26	74	4	67	26		.051	
312	492	478	317	8400	3748	3537	1175	642	49	85	121		108		278		83		83	13	8	17		.036	
316	486	502	703	8508	1173	7235	100	647	8	210	63	292	54			20	46		46	32	1	54	84	.065	
312	498	473	523	8705	2755	5940	10	704	196	94	44	314	50	1	5		48		48	13	28	52	86	.059	
307	486	493	659	9306	2080	7113	113	683	19	216	78	305	65				46		46	32	3	54	82	.068	
312	490	480	753	9346	1213	7930	203	665	16	476	100	1	72				89		89	72	2	11	2	.036	
302	494	502	600	9397	3335	6062		472	25	170	39		238				50		50	36	5	50		.092	
312	496	474	755	9496	1811	7599	86	585	35	171	63		259	57	1	39	43	6	46	29	6	54		.081	
243	497	479	798	9556	1124	8420	12	563	18	180	137	3	225				60		60	32	3	40	1	.065	
312	496	472	557	9915	2921	6984	10	655	74	32	26		160	323	39		26		26	5	11	74		.132	
307	486	495	614	9927	2552	6215	1160	597	39	171	64	196	106			21	49	1	49	29	7	51	65	.077	
320	488	481	799	10039	613	9313	113	714	19	162	18	491	8			17	30		30	23	3	70	98	.107	
313	499	474	887	10259	549	9200	510	437	7	180	46	3	125	77		166	39	27	53	41	2	47	1	.101	
312	494	480	425	10259	3837	4422	2000	649	177	116	67	42	81	78	88	64	63	9	69	18	27	31	21	.053	
243	498	481	943	10562	719	9833	10	577	8	134	124	1	310				46		46	23	1	54		.091	
230	509	507	572	10573	4587	5730	256	422	20	289	55	19	33			7	52	40	88	68	5	12	37	.065	
243	501	485	1626	10788	1290	9156	342	478	14	92	89	115	168			219	28	31	41	19	3	59	41	.127	
312	493	470	103	11092	9483	1196	413	591	104	15	20	4	265	134	49	51	29	8	32	3	18	68	1	.136	
312	498	474	988	11140	884	10110	146	337	10	263	42		54	76	3	210	38	38	62	45	3	38		.123	
316	486	501	708	11376	1845	8468	1063	478	16	178	34	222	27				48		48	37	3	52	89	.115	
320	488	482	832	12079	2944	8915	220	622	22	270	51	150	35			94	70		70	43	4	30	81	.063	
312	492	472	499	12302	6201	5198	903	680	51	237	26	5	61	122	159	48	65	7	69	35	8	31	2	.060	
312	499	471	858	12468	2578	9890		635	30	467	53		85				28	83	4	87	74	5	13		.052
307	486	498	928	12537	737	11550	250	608	9	288	60	4	247				59		59	47	1	41	2	.081	

			OBSERVED DEVELOPMENT	TOTAL FLOOR SPACE				1973 LAND USE FILE										PERCENT OF TOTAL										PAGE 4	
ST CTY	SO MI X	MI Y		HSNG UNITS	FLOOR X 100				LAND IN ACRES										AREA		LAND						OPEN REC	FAR	
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN						
302	493	502	296	12615	9478	3002	135	722	376	32	25		285		6		61		61	4	52	39							.066
307	486	494	443	12717	7880	4734	103	600	61	159	118		251		10		58		58	27	10	42							.084
320	487	485	986	12978	2352	10216	410	755	24	247	57	280	73		75		53		53	33	3	47	79						.074
243	499	486	1510	13075	336	12739		716	164	198	152	1	200				72		72	28	23	28	1						.058
320	487	482	1125	13568	2135	11273	160	760	30	427	70	185	49				69		69	56	4	31	79						.059
312	491	475	142	13908	4132	1436	8340	635	33	42	65	3	151		340		76		76	7	5	24	2						.066
312	493	476	231	14061	11646	2341	80	424	154	44	128	3	27	4	64	95	75	18	92	10	36	8	8						.083
243	496	485	1409	14218	2575	11643		530	30	121	81	10	289				44		44	23	6	56	3						.141
243	498	485	497	14482	9086	5396		466	368	28	45		24				95		95	6	79	5							.075
312	496	471	977	14642	3266	11320	54	576	64	137	63		303		9		47		47	24	11	53							.123
312	493	472	1064	14916	2660	11391	865	493	33	238	59	4	140		18		71		71	48	7	29	3						.098
243	499	483	1094	15082	1465	13498	119	423	20	102	50	101	117		33		48		48	24	5	52	46						.169
312	493	480	1539	15323	1453	13870	20	644	49	223	94	9	139	95	36		62		62	35	8	38	4						.088
320	486	486	986	15441	3348	12090	3	624	53	219	67	245	40				54		54	35	9	46	86						.105
320	488	483	1497	15673	483	15190		571	11	369	88	31	72				82		82	65	2	18	30						.077
307	493	491		15675	15675			532	417		99		4	13			97		97		78	3							.070
320	486	484	1441	16047	1470	14543	34	564	15	422	96	12	19			7	93	1	95	75	3	5	38						.069
307	486	489	789	16054	8004	8050		616	55	208	49	260	44		8		50	1	51	34	9	49	85						.118
312	489	480	1368	16184	1961	14223		556	23	375	68		90				84		84	67	4	16							.080
312	492	471	1081	16503	4898	11340	265	583	43	129	72	44	162	122	12	63	40	10	44	22	7	56	13						.148
316	486	500	759	16857	8021	8773	63	658	187	245	82		129		15		80		80	37	28	20							.073
302	493	499	9	17118	16902	113	103	554	83	1	10	37	56	367		40	16	7	17		15	83	8						.416
230	508	508	258	17145	640	2663	13842	351	2	196	43	60	10		40	351	40	50	80	56	1	20	86						.140
203	506	507	2000	17234	3556	10941	2737	327	32	95	66	7	116		12	568	23	63	62	29	10	38	5						.194
312	495	472	1131	17321	5863	11450	8	664	106	271	82	3	189		13		71		71	41	16	29	1						.084
312	490	474	544	17422	10659	6550	213	653	77	157	74		190		156		71		71	24	12	29							.086
312	496	473	1057	17724	4411	13313		559	49	53	91		142	127	96	2	52		52	10	9	48							.141
312	491	480	1422	17910	3064	14711	135	661	54	296	102	172	36				68		68	45	8	32	83						.091
312	491	470	1432	18002	3334	14572	96	426	62	255	82	5	22				94		94	60	15	6	20						.104
243	501	486	1617	18073	2694	15321	58	594	253	109	85	22	122		4		76		76	18	43	24	15						.092
243	500	483	1910	19316	1501	17795	20	546	41	145	89	52	220				50		50	27	7	50	19						.161
307	493	490		19317	19317			615	154		5		352	104			26		26		25	74							.279
312	489	481	1521	19902	4285	15580	37	752	61	451	83	1	155		1		79		79	60	8	21							.077
307	488	499	1489	19978	1864	17470	644	645	37	217	79	251	46		14		54		54	34	6	46	85						.132
312	493	475	18	20080	19861	219		295	177	2	2		64	47	3	305	31	51	62	1	60	38							.250
302	494	500	28	20303	19737	283	283	672	88	14	34	1	256	278	1	16	20	2	20	2	13	80							.340
312	494	470	8	20471	19848	85	538	540	170	5	14		249	92	10	4	37	1	37	1	32	63							.236
312	491	479	1358	20501	6688	13598	215	786	59	245	98	5	255		124		67		67	31	8	33	2						.089
312	495	473	1407	20661	4919	15742		659	74	282	123	2	171		7		74		74	43	11	26	1						.098
320	490	483	1685	20768	3164	17217	387	711	34	280	170	176	16		9	27	71	2	72	39	5	28	88						.093
312	490	478	1280	20832	5561	15231	40	612	155	173	52	1	190	34	6		63		63	28	25	37	1						.124
312	494	481	1324	21149	6293	14506	350	597	248	177	102	8	63				88		88	30	41	12	11						.092
312	491	476	908	21232	11533	9699		660	101	132	240	11	156		19	1	75		75	20	15	25	7						.099
312	490	475	714	21277	13936	7213	128	567	181	138	71	7	164		6		70		70	24	32	30	4						.123
243	500	487	1599	21309	4051	17149	109	574	48	176	158	11	182			15	65	3	66	31	8	34	6						.128
320	489	482	908	22115	12445	9670		592	117	285	67	3	70		51	8	87	1	88	48	20	12	4						.098
320	489	484	1699	22245	5252	16993		627	91	347	75	1	113				82		82	55	15	18	1						.100
312	493	477	1727	22407	4623	17761	23	632	65	216	144		167				74		74	34	10	26							.111
320	486	482	1788	22413	4012	18288	113	684	36	484	86	29	49				89		89	71	5	11	37						.085
320	487	484	1310	22458	9010	13448		456	55	319	68	6	8				97		97	70	12	3	42						.117
230	509	508	1192	22585	10662	12305	218	596	64	281	64	154	15		17		72		72	47	11	28	91						.121
312	491																												

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			TOTAL FLOOR SPACE				1970 LAND USE FILE										PERCENT OF TOTAL										PAGE 5	
ST CTY	SQ MI X Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES						AREA		LAND				OPEN		FAR						
				TOTAL	NRS	RES	SPEC	TTL NRS	RES	ST	REC	VAC	SMP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN		REC					
243	493 482		1826	23112	3439	19713		561	26	159	122	253				55	55	28	5	45				.173				
312	493 478		980	23141	12101	10871	170	655	113	122	153	10	209		48	66	66	19	17	34	5			.122				
320	486 483		1500	23190	7934	15133	123	605	64	396	101	21	20		4	93	93	65	10	7	51			.094				
312	490 481		1897	23334	3128	20290	6	604	76	398	113		15		3	97	97	66	13	3				.091				
243	499 487		2089	23921	7309	16516	96	644	178	150	232	43	41			87	87	23	28	13	52			.098				
312	492 479		1260	24107	10941	13086	80	632	250	178	121	18	28		36	92	93	28	40	7	39			.095				
309	496 498		197	24357	21938	2183	186	648	196	19	106		65	256	7	51	51	3	30	49				.171				
320	490 482		1921	24399	4847	19462	90	683	52	375	109	27	56		63	87	1	88	55	8	12	32		.693				
309	496 499		181	24458	21355	2630	463	561	146	25	95	3	135	145	11	50	50	5	26	50	1			.202				
312	493 471		235	24736	22305	2431		622	177	56	21		324	31	13	42	1	43	9	28	57			.213				
312	492 477		2089	24865	3624	21163	78	624	36	342	182	32	32			90	90	55	6	10	50			.102				
320	486 485		280	24987	21467	3070	450	674	160	173	43	221	74		3	56	56	26	24	44	75			.151				
312	490 470		2022	25255	4721	20524	10	700	74	378	131	3	61		52	91	91	54	11	9	4			.091				
312	490 479		1943	25522	5338	20184		548	59	267	134	1	88			84	84	49	11	16	1			.127				
312	494 471		24	25553	25251	302		628	106	4	6		406	70	35	24	24	1	17	76				.366				
243	497 485		455	25878	13168	12521	189	839	469	129	114	93	93			78	78	15	49	22	50			.091				
312	490 470		995	26281	15520	10426	335	784	126	278	74	17	289		2	61	61	35	16	39	6			.126				
243	494 486		41	26379	25661	527	192	501	275	3	30		164			53	21	67	1	55	33			.180				
312	494 482		2199	26902	4600	22302		572	51	327	167	20	1		5	96	96	57	9	4	93			.112				
320	489 487		1822	27097	8503	18594		632	73	281	116	44	90		29	79	79	44	12	21	33			.125				
203	507 516		1785	27655	1437	25966	252	218	9	78	50	3	37		41	573	23	72	82	36	4	18	7	.356				
243	499 484		1709	27697	3380	24293	24	543	33	218	102	11	179			65	65	40	6	35	6			.180				
243	499 481		2725	28323	1853	26470		617	38	307	125		147		17	74	3	76	50	6	24			.138				
320	490 488		2072	28675	7950	20725		618	60	324	100	124	11			78	78	52	10	22	92			.136				
320	486 487		1802	29087	9507	19195	385	584	67	257	86	167	7		1	70	70	44	11	30	96			.163				
313	499 473		856	29474	19985	9389	100	711	84	166	78	5	343		32	46	46	23	12	54	1			.205				
309	494 495			29550	29420		130	595	95	159			4	326	12	45	45	16	55					.255				
312	495 474		2122	29655	7411	22244		684	81	328	148	5	117			82	82	48	12	18	4			.121				
307	486 497		2272	29785	5986	23799		668	48	446	104	3	66			90	90	67	7	10	4			.114				
312	490 477		1170	29930	16131	13343	456	713	173	214	52	163	91		19	63	2	64	30	24	36	64		.150				
243	497 486		2882	30225	2799	27426		605	26	237	267	6	68			88	88	39	4	12	9			.131				
241	508 506		1411	31114	2537	22177	6400	397	24	83	75	21	40		153	40	52	85	21	6	15	34		.213				
243	498 489		1158	31187	18490	12648	49	482	260	98	47	9	69			58	31	84	20	54	16	11		.177				
243	499 482		2471	31198	2953	28191	54	603	37	290	102	1	172			71	71	48	6	29	1			.167				
312	492 480		2398	31353	5300	26029	24	625	100	344	122	6	10		42	97	97	55	16	3	40			.118				
307	488 497		2494	31575	6001	25574		591	47	432	84	13	15			95	95	73	8	5	47			.129				
307	488 498		2334	31634	7195	23805	634	729	102	344	80	153	50			72	72	47	14	28	75			.138				
312	492 481		545	31806	25316	6490		640	337	124	65	2	114			82	82	19	53	18	1			.139				
320	490 484		2419	31820	7191	24629		600	45	351	194		11			98	98	58	7	2				.124				
312	491 478		2175	32550	7737	24813		588	130	161	103		104		89	82	82	27	22	18				.154				
309	495 497		27	34512	34122	390		605	229	2	16		36	312	10	38	10	42	38	58				.308				
243	501 487		2980	34782	7594	21832	5356	773	70	197	199	1	78		228	90	90	25	9	10	2			.115				
243	500 486		2817	35012	3415	31583	14	611	50	321	114	2	123			80	80	53	8	20	2			.165				
224	507 488		4492	35210	2747	32451	12	176	8	31	37	46	54			10	76	43	17	4	57	46	1.076					
307	489 498		3131	36731	4826	31905		649	52	443	114		21		20	97	97	68	8	3				.134				
302	493 500		9	38132	38019	113		543	131	1	1		79	331		51	9	24	24	76				.659				
241	506 505		2641	38298	5594	32257	447	650	54	289	204	11	91		1	84	84	44	8	16	11			.160				
320	487 486		150	38370	35891	1666	813	581	264	77	23	168	14		36	69	69	13	45	31	92			.221				
243	498 487		3422	38403	4158	33941	304	697	41	285	154	123	91		3	69	69	41	6	31	58			.183				
312	493 479		1939	38805	18639	20130	36	661	127	231	163	17	78		1	79	79	35	19	21	12			.171				
312	493 481		436	38818	34164	4654		672	141	112	49	1	328	41		45	45	17	21	55				.294				
312	494 472		304	39555	36406	3149		749	184	56	24	6	363	24	92	47	47	7	24	53	2			.255				

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1970 LAND USE FILE

ST CTY	SQ X	MI Y	OBSERVED DEVELOP	HSNG UNITS	FLOOR X				LAND IN ACRES								PERCENT OF TOTAL								OPEN REC	FAR
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SMP	SPC	WAT	AREA- DEV	WAT	DEV	RES	NRE	OPN			
307	488	495		3255	40304	6096	33554	654	647	41	481	94	4	4		33	99	99	74	6	1	50	.145			
243	498	486		3908	40539	3255	37189	95	672	20	297	230	2	132			80	80	44	3	20	2	.173			
302	493	503		164	41503	39730	1773		643	459	21	40		116		7	82	92	3	71	18		.181			
320	490	487		2190	41904	19652	22100	152	669	135	333	100	37	60		3	85	85	50	20	15	38	.168			
309	495	499		2819	41958	12344	29311	303	677	89	280	127	5	45	122	9	73	3	75	41	13	25	3	.190		
320	487	483		2251	42143	18908	23035	200	688	129	430	108	2	18			97	97	63	19	3	11	.145			
307	489	497		3381	43930	8334	35596		649	44	322	105	60	38		79	85	85	50	7	15	61	.183			
320	486	488		1891	44261	24527	19563	171	611	178	309	99	6	7		11	98	98	51	29	2	44	.170			
316	488	500		3184	44441	8269	33527	2645	692	62	374	177	12	12		55	97	97	54	9	3	50	.153			
224	508	495		2539	45031	8626	36185	220	621	66	87	73	1	394			36	36	14	11	64		.459			
320	489	488		2137	45519	23411	22108		680	128	307	126	117		1	1	83	83	45	19	17	99	.186			
224	503	489		4886	45649	4876	40773		509	41	112	139	214	3			57	57	22	8	43	99	.359			
316	488	503		3296	45758	11955	33797	6	591	37	265	171	1	7		110	94	5	99	45	6	1	.180			
320	491	488		1123	45886	33975	11901	10	592	186	181	59	160	6		1	72	72	31	31	28	97	.247			
307	490	498		3238	45893	12254	33568	71	594	72	406	98	10	6		3	97	97	68	12	3	63	.182			
320	488	489		2592	46825	20547	26268	10	612	96	323	96	4	41		53	93	93	53	16	7	9	.190			
241	509	505		4221	46997	11916	34889	192	615	46	270	166	45	88			78	78	44	7	22	34	.224			
312	492	470		2550	47748	20867	26784	97	638	147	261	118	7	74	14	18	80	6	85	41	23	15	8	.202		
307	488	496		3136	48493	16208	32187	98	583	102	358	72	27	4		19	95	95	61	17	5	87	.202			
241	508	505		4967	49387	4299	45025	63	621	21	281	150	134	35			73	73	45	3	27	79	.251			
322	494	503		2937	49541	17584	31947	10	641	137	304	121	10	61		37	84	5	89	47	21	11	15	.199		
241	507	498		4512	50365	9250	40935	180	666	185	115	107	197	3		59	70	70	17	28	30	98	.248			
320	489	493		1438	51570	36322	15248		657	291	250	86		29		1	96	96	38	44	4		.189			
312	494	479		561	51666	45463	6200	3	647	383	88	51	3	71	49	4	71	12	81	14	59	19	2	.226		
307	490	497		4372	52683	6619	46031	33	730	66	436	116	88	5		18	87	87	60	9	13	94	.190			
241	507	505		4928	54085	9432	44629	24	625	50	322	228	3	22			96	96	52	8	4	10	.207			
241	506	497		5186	55139	11660	43233	246	777	100	116	119	31	39		372	91	91	15	13	9	44	.179			
307	490	496		2496	56150	29725	26382	43	616	135	212	80	164	13		12	71	71	34	22	29	93	.293			
316	489	500		2627	56937	29747	27190		677	114	356	130	14	8		55	97	97	53	17	3	62	.199			
309	495	498		69	58962	58100	862		721	245	1	19	3		453		37	37		34	63	1	.510			
320	488	488		2145	59558	37351	22207		640	185	323	77	8	46			92	92	51	29	8	15	.234			
302	495	502		155	59898	58020	1878		466	66	4	40	106		229	20	23	18	28	1	14	72	32	1.049		
307	489	496		3895	61162	20438	40089	635	585	91	311	97	56	18		12	87	87	53	16	13	76	.275			
316	488	501		1758	62708	44722	17986		699	253	214	142	26	64			87	87	31	36	13	29	.237			
320	489	489		3812	64051	23901	40127	23	673	173	325	96	30	47		2	89	89	48	26	11	39	.247			
309	496	494		4209	67215	24593	42576	46	588	121	137	81	121	129		89	50	13	58	23	21	42	48	.456		
224	503	492		6543	67448	14004	53393	51	841	48	102	74	2	9		606	99	99	12	6	1	14	.186			
316	488	502		3863	71721	27052	39766	4903	662	114	334	168	27	17		3	93	93	50	17	7	61	.266			
241	507	502		6148	72089	8690	62924	475	640	27	178	163	70	11		190	87	87	28	4	13	86	.296			
316	489	499		1880	75658	56361	19297		626	151	346	93		22		14	96	96	55	24	4		.287			
307	489	490		6198	78871	13282	63467	2122	582	60	313	143	52	6		8	90	90	54	10	10	90	.345			
241	507	499		6292	81741	26237	55285	219	528	100	222	171	10	25			93	93	42	19	7	28	.380			
241	508	499		5750	82304	8876	73396	32	661	34	190	179	249	8			61	61	29	5	39	97	.468			
307	489	491		8023	98368	14274	84078	16	635	63	405	158	3	6		2	98	99	64	10	1	32	.361			
203	500	509		9340	100918	11489	89429		453	30	81	92	244	6			45	45	18	7	55	98	1.141			
316	489	501		5215	103030	48360	54524	146	595	172	250	147	7	17		2	96	96	42	29	4	29	.414			
320	492	489		4998	108808	56090	52718		566	137	174	87	45	12		110	90	90	31	24	10	80	.490			
305	492	495		6241	108877	44575	63879	23	768	174	341	154	36	62		2	87	87	44	23	13	36	.373			
316	486	503		3894	110882	68159	42510	213	666	186	139	114	94	125		8	67	67	21	28	33	43	.570			
203	502	504		6800	125827	74171	51644	12	491	281	41	115	3	50		46	82	9	89	8	57	11	6	.660		

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			TOTAL FLOOR SPACE			1970 LAND USE FILE												PERCENT OF TOTAL					OPEN		
ST	SO MI	MI	OBSERVED DEVELOPMENT	HSNG	FLOOR X		100 -			LAND IN ACRES							AREA		LAND			OPEN			
CTY	X	Y		UNITS	TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC	FAR
309	494	496			50	50			597	16	71			501	9		16		16		3	84			.001
309	495	496		8	824		101	723	471		15		45	262	149	184	25	28	35			65			.011
312	494	483		132	3492	1350	2142		638	112	17	109		202	195	3	39	36	6	38	3	18	62		.033
243	494	485			4598	1298		3300	470	268		1		99	55	46	141	52	23	67		57	33		.033
307	495	492			5188	5178		10	403	247		11	4	101	28	11	184	46	31	67		61	33	3	.044
203	505	506		814	7470	324	7092	54	218	8	36	23	103	49		201	16	48	31	17	3	69	68		.258
302	495	505		566	7649	1708	5941		647	26	109	186	118	133	74		46	46	7	50	17	4	50	36	.055
320	493	483		388	8869	4775	3900	264	613	172	56	25		155	158	46	40	46	6	49	9	28	51		.068
243	501	484		921	9151	275	8824	52	201	4	75	33	14	74		222	27	52	56	37	2	44	16		.188
203	504	505		1341	10010	1401	7346	1263	269	13	66	45	33	113		251	24	48	46	24	5	54	22		.187
320	493	484		593	13851	7492	6206	153	562	260	52	46	36	87	57	24	68		68	9	46	32	20		.083
309	496	496		147	16297	12727	1570	2000	590	292	8	10		61	140	79	93	57	14	66	1	50	34		.096
307	487	499		1488	17228	2033	15132	63	685	17	413	78	11	99		67	84		84	60	2	16	10		.069
320	493	485		2	17352	17237	25	90	555	461		32		9	2	50	58	89	10	98		83	2		.073
243	496	477		1504	17656	4121	13447	88	574	35	172	86	3	277		33	48	5	51	30	6	49	1		.138
309	493	496			17668	17668			549	92		6			447	3	2	18		19		17	81		.399
241	509	496		2300	18548	3326	15216	6	570	17	129	89	166	170			41		41	23	3	59	49		.182
243	495	487		603	18755	14714	3998	43	581	185	105	32	12	243		4	273	38	32	56	18	32	44	5	.132
316	487	500		1688	19524	2062	17429	33	667	23	464	158	1	12		9	98		98	70	3	2	6		.068
243	501	488		1563	19577	3324	16249	4	322	42	128	69	5	78		302	38	48	74	40	13	26	6		.188
320	488	485		1848	23694	5140	18509	45	653	44	392	109	31	77			83		83	60	7	17	29		.100
241	506	502		2070	24480	8315	14861	1304	942	144	48	177	451	123		9	39	1	39	5	15	61	79		.153
307	488	490		2154	24984	3384	21600		553	54	365	118	14	2			97		97	66	10	3	86		.107
320	487	488		2041	26067	5127	20790	150	647	46	420	114	3	63		1	90		90	65	7	10	5		.103
307	487	491		1620	26562	9852	16338	372	557	74	336	80	21	41		5	89		89	60	13	11	34		.123
312	495	481		1077	26643	15754	10817	72	445	267	71	27		63	17		58	30	82	16	60	18			.168
224	508	491		960	29716	15912	13126	678	407	66	63	66	100	113			48		48	15	16	52	47		.351
243	499	488		2712	29935	1457	28434	44	668	119	226	82	114	102		26	68		68	34	18	32	53		.152
302	495	504		2221	30112	5978	24048	86	526	30	187	111	162	5	32	108	52	17	62	36	6	38	82		.211
320	489	486		2000	30941	10271	20670		603	112	237	105	3	145			75		75	39	19	25	2		.156
302	491	499		1818	32090	12742	18882	376	549	119	229	137	33	32			82	7	88	42	22	12	51		.152
307	487	495		2689	32535	4927	27608		573	42	357	99	31	43			87		87	62	7	13	42		.150
320	492	485		1057	32669	21608	11061		648	287	113	80	4	52		111	89	2	91	17	44	9	8		.127
307	487	494		1751	32958	14849	18079	30	585	72	229	124	1	159			73		73	39	12	27	1		.178
307	487	497		2351	33653	8728	24285	40	579	72	372	81	50	3			91		91	64	12	9	94		.144
307	487	492		2659	33454	6285	27159	10	664	51	429	119	28	38			90		90	65	8	10	42		.128
302	496	505		2295	33781	9492	23740	549	583	59	290	117	50	52		16	82		82	50	10	18	49		.161
243	501	489		771	33933	26072	7421	440	256	107	37	35	9	67		331	31	56	70	15	42	30	11		.433
307	487	490		1867	34273	15439	18770	64	669	82	451	94	18	20		3	94		94	67	12	6	48		.125
312	495	482		1936	34511	13954	20397	160	400	150	168	62	1	8	8	3	139	71	26	96	42	38	4	5	.207
316	487	501		1859	35463	16194	19279		605	129	307	150	10	8			97		97	51	21	3	57		.139
302	492	497		2526	35694	9973	25551	170	624	260	210	68	1	36		49	93	1	94	34	42	6	2		.140
320	494	484			36032	36032			601	279		53		33	209	28	58	3	60		46	40			.230
302	495	503		1271	36176	19244	13368	3564	597	162	110	86	43	37	71	88	63	16	75	18	27	25	28		.186
312	491	481		1789	36231	17185	19018	28	612	160	277	91	13	70		1	86		86	45	26	14	16		.157
241	506	504		3038	36429	4115	32314		578	156	150	97		175			70		70	26	27	30			.207
320	487	489		2365	36679	11911	24217	551	713	82	439	89	77	26			86		86	62	11	14	74		.138
307	487	498		2352	37749	12344	24677	728	682	84	447	94	49	7		2	92		92	66	12	8	88		.138
203	504	507		2449	38274	19421	18656	197	569	147	86	172	4	107		52	81		81	15	26	19	3		.192
320	496	485		2485	38567	13141	25386	40	654	89	387	113	58	6			90		90	59	14	10	91		.150
320	498	487		814	38603	30054	8416	133	686	194	136	51	290	5		9	57		57	20	28	43	98		.227
243	500	485		3534	46472	2948	37147	377	573	84	239	122	20	108			78		78	42	15	22	15		.209

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			TOTAL FLOOR SPACE				1970 LAND USE FILE														PERCENT OF TOTAL										PAGE 8	
ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES								AREA				LAND				OPEN REC	FAR						
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN									
302	492	499		2534	40716	14577	26089	50	585	65	335	138		27	15	5	93		93	57	11	7			.172							
320	492	482		817	40763	30843	8347	1573	631	142	179	66	10	180	36	18	62	3	64	28	22	36	5		.231							
302	492	502		3104	41047	9253	31737	57	622	72	412	130	6	2			99		99	66	12	1	70		.154							
320	488	486		2086	41383	19701	21682		649	175	290	113	59			11	91		91	45	27	9	100		.161							
203	503	509		2936	41563	13914	27642	7	594	45	153	197	23	176			66		66	26	8	34	12		.242							
302	490	505		964	41834	32040	9754	40	470	93	200	119	28	18	12		87	1	88	42	20	12	48		.233							
316	487	502		2966	42561	11797	30274	490	698	140	296	203	9	38			93		93	42	20	7	19		.150							
309	496	501		31	42898	41839	383	676	568	222	6	27		72	229	11	89	41	14	47	1	39	53		.369							
302	494	505		3566	43259	7061	36164	34	656	65	440	141	6	2			99		99	67	10	1	77		.153							
302	491	500		3089	43722	12507	31215		588	66	350	130	3	38			87	6	93	59	11	7	8		.184							
243	496	487		2915	44141	17093	26943	105	602	116	236	110	7	133			77		77	39	19	23	5		.219							
302	488	505		3261	45118	11815	33257	46	621	68	369	111	1	67			87	3	89	59	11	11	1		.187							
224	508	493		3750	45418	2060	43358		602	9	135	113	206	139			29	32	43	22	2	57	60		.406							
320	491	484		3237	45629	12349	33280		585	88	357	126	11	2			98		98	61	15	2	82		.183							
320	489	485		1460	46023	30270	15713	40	644	161	276	102		96			85		85	43	25	15			.193							
241	504	502		4519	46137	9247	36812	78	676	321	165	153	7	29			95		95	24	48	5	20		.166							
320	488	484		2732	46499	18162	28212	125	644	113	406	97	7	19			96		96	63	18	4	27		.173							
302	491	505		2107	47073	24877	21533	663	729	219	330	142	1	29			96		96	45	30	4	3		.155							
302	492	503		3438	47629	10674	36775	180	529	42	349	121	8	9			97		97	66	8	3	45		.214							
316	485	505		2904	47716	17008	30285	423	619	94	236	87	8	140			75	1	76	38	15	24	5		.233							
320	491	486		3445	48173	11802	35651	720	671	50	298	112	203	1			70		70	44	7	30	99		.237							
320	492	484		2355	48699	23538	25118	43	623	251	221	88	37	25			90		90	35	40	10	60		.199							
307	487	493		3171	48711	16967	31744		607	68	345	140	5	49			91		91	57	11	9	10		.202							
302	490	504		2847	48965	18039	30818	108	757	188	286	86	4	44	33	116	89		89	38	25	11	5		.167							
302	497	503		3717	49223	9129	40050	44	554	43	333	132	16	30			91		92	60	8	8	35		.222							
203	504	506		4565	49597	8466	41031	100	761	62	128	109	247	202			40	2	41	17	8	59	55		.365							
320	491	485		3452	50469	14756	35690	23	577	80	315	147	13	23			94		94	54	14	6	37		.214							
203	505	507		5245	50656	6142	44258	256	567	28	234	184	30	91			73	7	79	41	5	21	25		.261							
320	487	487		1216	50679	38274	12402	3	689	243	318	72	49	7			92		92	46	35	8	88		.184							
316	490	499		1838	50979	31533	19360	86	729	213	298	107	11	22			93	2	95	41	29	5	34		.168							
243	501	484		3758	52183	13071	37610	1502	601	107	284	133	26	48			88		88	47	18	12	35		.227							
316	490	500		2976	53700	23579	30121		643	130	326	145	32	9			94		94	51	20	6	78		.205							
320	490	486		3931	53870	12113	41757		650	87	395	138	11	18			96		96	61	13	4	38		.199							
307	488	492		2883	54117	24015	30088	14	653	57	456	124	6	10			97		97	70	9	3	39		.195							
302	496	504		3428	55031	19095	35840	96	607	95	331	127	19	10	25	1	91		91	54	16	9	36		.228							
320	491	482		2805	55367	26199	28970	198	641	130	336	141	10	19	5	1	94	1	95	52	20	5	29		.209							
302	489	504		2794	55730	25623	30075	32	629	116	361	126	14	9			96		96	57	18	4	61		.211							
302	494	504		2910	56664	25424	30975	265	581	170	228	118	27	8			86	8	94	39	29	6	78		.238							
241	509	503		5097	57741	8334	49336	71	602	22	274	148	74	12			86		86	46	4	14	86		.257							
302	496	502		502	57744	52414	5207	123	624	282	52	39	5	25	213	7	61		61	8	45	39	2		.348							
224	508	492		4131	58103	7546	50510	47	726	31	237	150	267	42			47	18	58	33	4	42	86		.320							
241	508	501		8097	60447	7924	52523		659	27	280	188	161	2			75		75	43	4	25	99		.280							
302	496	503		2762	60775	33725	28990	1060	636	175	256	123	18	21	26	17	83	7	90	40	28	10	28		.244							
241	505	504		5522	61209	19245	41779	185	587	106	220	152	28	81			73	10	81	37	18	19	26		.294							
302	492	498		3277	61417	27303	34104	10	650	148	342	110	4	41			93		93	53	23	7	10		.234							
302	491	504		2514	61512	35146	26326	40	564	210	255	80	13	5			97		97	45	37	3	71		.259							
241	507	501		4603	61645	6986	54659		503	21	109	129	236	7			52		52	22	4		97		.546							
243	497	487		4592	61695	10082	51605	8	601	47	291	165	3	94			84		84	48	8	16	3		.281							
302	492	501		4046	61724	19340	42381	3	588	79	352	135	6	12			97		97	60	14	3	31		.249							
302	491	498		3030	61885	29336	32133	416	604	168	271	107	41	12			85	7	91	45	28	9	77		.258							
243	498	488		5215	62735	13393	49320	22	591	72	353	134	2	30			95		95	60	12	5	5		.258							
241	509	502		4122	62889	7089	55754	46	604	30	300	186	17	28			92		92	50	5	8	38		.259							
241	509	503		4517	63314	10288	53021	5	632	54	328	200	13	37			92		92	52	8	8	26		.250							

MODERATELY DEVELOPED

OBSERVED
DEVELOPMENT

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			TOTAL FLOOR SPACE				1970 LAND USE FILE												PERCENT OF TOTAL													
ST CTY	SQ MI X	Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES							AREA--LAND--				OPEN REC	FAR											
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SMP	SPC	MAT	DEV	MAT			DEV	RES	NRE	OPN							
316	487	505		4834	63414	12574	49830	1010	714	68	429	137	77	4			37	84	5	89	60	10	11	96	.230							
302	497	504		5264	64348	7451	56823	74	703	80	445	151	7	19		2		96		96	63	11	4	27	.218							
302	489	503		2739	66749	36863	28869	1017	499	156	209	108	15	10			88	81	15	95	42	31	5	61	.323							
302	492	504		3169	66848	31409	35439		649	186	300	145	3	16				97		97	46	29	3	15	.243							
302	492	500		3000	67032	36219	30733	80	623	134	276	121	22	34	23	12		87		87	44	22	13	27	.283							
302	491	501		3330	67107	31203	35445	459	626	155	286	117	51	8		9	8	89	1	90	46	25	10	86	.272							
302	490	503		4678	67498	17598	49791	109	612	100	399	93	17			2	12	95	2	97	65	16	3	100	.261							
307	487	496		3860	68032	27312	40706	14	697	123	453	109	3	8		1		99		99	65	18	1	25	.228							
312	494	478		1287	69089	56029	13060		616	332	106	74	16	88				83		83	17	54	17	15	.310							
302	491	503		4848	69326	19491	49835		592	103	363	105	5	17				96		96	61	17	4	22	.279							
320	492	486		3328	69888	34650	34518	720	579	185	246	117	25	4		3		95		95	42	32	5	87	.292							
203	503	508		4487	70235	34415	35739	81	563	160	122	141	22	119				75		75	22	28	25	16	.381							
241	509	497		6688	70241	10348	59850	43	590	40	254	216	6	74				86		86	43	7	14	7	.316							
302	492	505		4766	70322	19886	50393	43	572	112	339	108	1	12				98		98	59	20	2	6	.289							
307	488	491		5008	70354	19258	51060	36	621	119	350	116	34	2				94		94	56	19	6	94	.276							
302	488	504		2335	70739	45920	24471	348	586	160	269	132	1	18		6	61	88	9	97	46	27	3	5	.287							
320	491	483		2928	71960	41371	30583	6	696	234	283	111	66	2				90		90	41	34	10	97	.263							
241	507	504		6943	73011	6935	65992	84	638	17	386	199	24	13				94		94	60	3	6	66	.279							
312	494	477		4264	73033	28955	44078		650	151	272	153	27	16		32		93		93	42	23	7	63	.276							
241	509	504		6597	73412	9242	63996	174	667	57	301	252	2	25				96		96	50	8	4	8	.263							
241	508	502		8031	75560	17881	57667	12	700	119	247	155	174	5				74		74	35	17	26	97	.333							
241	506	499		7053	76233	8254	67973	6	741	29	253	186	91			182		88		88	34	4	12	100	.269							
312	493	482		855	77192	68026	9166		597	240	167	53	14	121	2			77		77	28	40	23	10	.385							
302	493	501		229	78635	75249	2644	742	758	265	102	27		62	298		7	52	1	53	13	35	47		.454							
302	497	502		5830	79279	18186	60539	554	616	81	305	122	7	21		79		95		95	50	13	5	26	.310							
309	492	496		5221	79364	24793	45571		680	117	319	158	4	14		68		97		97	47	17	3	21	.275							
316	485	503		4339	79393	34258	45135		560	82	306	124	25	23		1	26	87	4	91	55	15	9	51	.356							
243	500	488		4547	79730	30260	44923	4547	597	108	197	123	23	146			13	70	2	72	33	18	28	14	.428							
302	497	505		5101	80018	24914	55071	33	709	111	298	185	42	73				84		84	42	16	16	36	.309							
241	505	499		7454	81077	12439	68584	54	704	47	255	203	2	31		167		95		95	36	7	5	5	.277							
302	489	505		1713	81372	64194	17164	14	626	147	306	123	2	34	12	1		92		92	49	24	8	4	.323							
302	494	501		20	84289	84049	240		687	329	37	14		7	300			55		55	5	48	45		.510							
243	499	489		6746	89956	33578	56274	104	697	118	297	152	3	127				81		81	43	17	19	2	.364							
241	505	502		9391	90091	14459	75606	26	532	57	264	175	1	36			171	70	24	93	50	11	7	2	.417							
302	493	504		2500	90330	62304	27109	917	684	332	188	124	11	19		9	17	93	2	96	27	49	4	38	.317							
241	508	504		6520	90479	16625	73838	16	656	59	367	216	1	14				98		98	56	9	2	5	.324							
224	508	494		9280	90533	15480	74512	541	686	40	290	174	56	126				73		73	42	6	27	31	.412							
320	492	483		819	95171	86796	8375		726	418	144	71	11	82			4	87	1	87	20	58	13	11	.365							
309	497	501		6979	95454	22996	72174	284	613	83	285	127	112	5		1	17	79	3	81	46	14	19	96	.442							
203	501	508		7945	98059	22290	75769		420	116	88	117	81	18				76		76	21	28	24	82	.701							
241	509	501		7955	104723	23563	81143	17	722	153	309	226	7	19		8		96		96	43	21	4	27	.345							
302	491	502		1835	105150	85181	19959	10	583	288	183	39	2	2		69	21	96	3	99	31	49	1	51	.416							
316	490	501		5681	105236	46949	57894	393	620	188	270	138	17	4		2	28	92	4	97	44	30	3	79	.404							
224	507	497		9307	105338	19813	81419	4106	652	72	214	181	38	38		108		88		88	33	11	12	50	.420							
316	486	505		4546	109681	61730	47119	832	578	216	212	132	2	6		11	38	93	6	99	37	37	1	25	.441							
241	509	500		11920	127566	21560	105958	48	579	79	262	217	6	14				96		96	45	14	4	31	.524							
203	501	509		13947	150071	31999	117362	710	821	71	201	191	292	66				56		56	24	9	44	81	.744							
241	508	500		13180	172639	26658	141667	4313	593	50	233	218	2	28			61	95		95	39	8	5	6	.704							
203	504	508		8063	183660	9980	173600	80	543	42	270	203	4	24				95		95	50	8	5	15	.818							

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			TOTAL FLOOR SPACE				1970 LAND USE FILE										OF POOR QUALITY										PAGE 10	
ST	SQ	MI	OBSERVED DEVELOPMENT	MSNG UNITS	FLOOR X 100				LAND IN ACRES				PERCENT OF TOTAL						OPEN REC	FAR								
CTY	X	Y			TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REG	VAC	SNP	SPC	MAT	DEV			MAT	DEV	RES	NRE	OPN			
309	498	493			3580	3490	90	605	306		38	261			14	56	2	57	51	43	100	.024						
309	498	492			4889	4210	679	414	302		10		6		95	170	70	29	98	73	2	.028						
203	503	504		45	11595	11370	210	179	115	1	30	2	31			468	23	72	82	1	64	18	5	.182				
203	506	509		1346	16749	3964	12444	288	55	99	50	3	81			34	63	11	71	34	19	29	4	.188				
309	498	491			17800			200	6		3		21		171	401	30	67	90	3	10			.228				
309	495	495			21131	20131		561	349		9	100		51	51	61	66	10	73	62	27			.119				
309	496	491		1914	24746	5336	19410	303	89	80	39	94	1			385	30	56	69	27	29	31	99	.272				
203	502	503		74	26372	25904	468	198	88		27	46	36			504	16	72	58	45	42	56		.523				
312	494	476		814	27991	19031	8790	419	220	45	39	3	102	7	3	256	45	38	73	11	53	27	2	.210				
309	496	492		1852	28386	8272	19669	224	65	69	41	32	5		12	414	29	65	84	31	29	16	87	.348				
309	496	488		1097	29786	18409	11377	221	123	40	42	15				402	33	64	93	18	56	7	98	.332				
307	495	491			31897	30619		263	217		23			9	14	320	44	55	97	82	3			.288				
307	494	492		6	35071	34544	60	612	270	1	68	11	241		21	21	57	3	59	44	41	4		.224				
224	508	490		3431	35503	4655	30824	472	64	104	133	96	75			366	36	44	64	22	14	36	56	.271				
203	503	505		2759	35755	3483	32268	504	49	90	42	83	241			166	27	25	36	18	10	64	26	.455				
224	505	487		4806	41097	7515	33060	240	23	111	65	20	20			81	62	25	83	46	10	17	51	.472				
241	506	503		1448	41331	23821	16930	418	132	40	94	9	143			28	60	6	64	10	32	36	6	.357				
307	494	494		186	44289	38108	2084	533	221	7	109		82	38	76	114	64	18	77	1	41	23		.246				
320	494	490			48129	48129		579	405		31		143			58	69	9	75	70	25			.253				
309	496	489		3445	48244	11806	36031	304	55	131	72	40	5			376	38	55	85	43	18	15	89	.429				
224	505	488		4952	51332	7885	43397	542	90	107	88	52	205			36	49	6	53	20	17	47	20	.414				
307	494	491			51805	50443		626	365		111		137		12	57	72	8	78	58	22			.243				
243	497	488		3251	54140	20633	32184	483	129	174	85	21	73			149	61	24	80	36	27	20	23	.320				
309	498	498		790	55350	46032	8386	407	295	39	63	3	3		4	366	52	47	98	10	73	2	52	.317				
309	498	499		3902	55696	13427	43250	313	163	105	29	5	4		7	429	41	58	97	34	52	3	56	.420				
307	495	490			56102	56102		324	288		9		27			304	47	48	92	89	8			.434				
309	497	491		4285	57294	13618	43334	605	103	163	86	1	41	88	118	55	72	8	78	28	17	22		.277				
320	491	487		4491	58418	12514	45859	581	60	390	122	1	8			98		98	67	10	2	7		.234				
320	491	489		3036	58819	26908	30970	631	101	285	107	51	12		75	90		90	45	16	10	90		.238				
309	498	494		2441	61431	28072	33290	589	435	63	67	6	6		11	15	96	2	98	11	74	2	49	.244				
307	491	497		3856	62402	21906	40336	587	115	301	139	8	19		5	27	91	4	96	51	20	4	29	.255				
309	496	490		4145	62557	19833	42646	287	60	129	85	12			1	405	40	59	96	45	21	4	99	.523				
320	493	486		1828	64613	45550	18940	565	252	81	179	20	8		25	95		95	14	45	5	71		.276				
224	508	496		5954	64940	22120	42776	603	80	121	157	29	216			59		59	20	13	41	12		.417				
320	494	488		666	65929	59139	6790	732	373	28	69	1	54	191	14	66		66	4	51	34			.312				
320	494	487		4127	73263	31619	41603	587	266	137	100	10	73		1	51	79	8	86	23	45	14	12	.334				
309	497	490		4435	73576	27165	46258	558	281	135	78	3	13		47	60	88	10	97	24	50	3	20	.312				
309	498	490			73771	73771		314	236		6		24		48	282	49	47	92	75	8			.585				
309	496	495		3153	73793	39697	32206	575	267	84	59	18	75	53	19	64	67	10	74	15	46	26	12	.395				
302	493	505		2152	74042	49672	23088	500	217	140	81	45	9		7	47	81	9	89	28	43	11	83	.382				
241	503	502		7414	74943	20082	54852	476	133	156	121	5	61			87	73	15	86	33	28	14	8	.420				
241	504	499		2700	75080	53008	21871	582	182	78	108	2	44		169		92		92	13	31	8	4	.321				
241	502	502		6867	77815	22245	55570	563	355	122	74		12			6	97	1	98	22	63	2		.324				
320	490	489		2646	78056	50494	27562	661	274	219	114	45	8		1	92		92	33	41	8	85		.295				
224	507	494		6849	78633	19529	59012	619	107	222	184	2	98		6	84		84	36	17	16	2		.348				
309	497	492		5374	81476	23478	56668	625	222	156	124	7	23		93	95		95	25	36	5	22		.314				
309	497	489		4007	83876	41300	42145	578	342	121	94	4	8		9	72	87	11	98	21	59	2	30	.340				
309	493	494		663	94635	77722	6913	713	346	42	34		146	144		54		57	7	59	6	49	41	.460				
307	489	494		7241	88019	15015	72930	648	101	332	152	9	3			98		98	59	16	2	77		.318				
224	507	492		8035	88964	11085	77432	617	52	337	204	20	34			91		91	50	8	9	37		.363				
307	488	494		6394	89199	23127	65588	638	108	329	147	8	1		45	99		99	52	17	1	85		.326				
307	491	496		4985	90876	39484	51236	610	160	287	130	22	6		6	37	90	6	95	47	26	5	80	.358				
307	489	495		3942	91328	51092	40171	641	188	272	84	90	6		1	85		85	42	29	15	93		.385				

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			TOTAL FLOOR SPACE				1970 LAND USE FILE										PERCENT OF TOTAL										PAGE 11	
ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X			LAND IN ACRES			AREA				LAND				OPEN REC	FAR								
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV			WAT	DEV	RES	NRE	OPN			
224	503	498		6456	92246	49232	42741	273	576	305	78	137	15	42			83	79	13	90	13	53	10	26	.407			
307	491	495		5534	92673	25694	66957	22	529	109	285	116	6	12			63	86	11	97	54	21	3	31	.417			
307	490	495		6126	93035	31395	61600	40	707	133	269	124	146	35				74		74	38	19	26	81	.406			
224	506	493		7755	93671	23223	70287	161	589	106	257	184	10	33				93		93	44	18	7	23	.394			
224	507	491		9353	93731	9541	84134	56	947	33	297	176	426	15			168	45	15	53	31	3	47	97	.426			
307	489	492		8183	94514	12548	81952	14	638	56	375	172	28	6		2		95		95	59	9	5	83	.359			
320	493	487		6003	95061	31614	61169	2278	679	115	265	151	68	44		36		84		84	39	17	16	61	.385			
320	492	488		6747	96695	26537	69685	423	612	132	345	109	5	18		2		96		96	56	22	4	23	.377			
309	498	500		6826	97696	25350	72248	98	344	166	90	63	11	12		2	353	46	51	93	26	48	7	48	.699			
241	503	497		10370	98451	15200	83128	123	686	86	261	277	2	50		10		92		92	38	12	8	5	.357			
307	491	490		8341	98702	13883	84819		589	48	317	143	77	3			33	82	5	86	54	8	14	96	.445			
241	509	499		8353	99839	23190	76639	10	648	94	280	230	5	39				93		93	43	14	7	12	.380			
320	493	488		2406	100605	76167	24193	245	700	302	122	95	4	141	33	2		74		74	17	43	26	2	.443			
241	506	498		8879	100691	21443	79117	131	630	94	192	143	5	44		152		92		92	30	15	8	10	.398			
203	502	509		10248	102573	13517	89056		637	74	309	200	10	44				92		92	49	12	8	18	.404			
307	490	490		6656	105243	38102	67051	90	645	153	290	167	30	5				95		95	45	24	5	86	.396			
307	488	493		6651	105760	39445	67269	46	644	150	277	155	61	1				90		90	43	23	10	98	.421			
224	507	493		11383	107852	6171	100649	1032	646	52	248	197	5	144			13	75	2	77	38	8	23	3	.498			
309	496	493		4063	109649	59596	43184	6869	595	284	194	67	13	8			19	80	17	96	33	49	4	63	.446			
316	487	503		4873	111535	61323	50122	90	565	167	219	174		5				99		99	39	30	1	7	.457			
241	509	498		8631	113205	33439	79323	443	819	75	289	226	208	21				72		72	35	9	28	91	.441			
316	485	504		6854	115496	43945	69822	1729	593	97	328	147	10	6		4		97		97	55	16	3	63	.460			
203	503	507		18337	115933	29950	85983		552	102	249	177	2	22				96		96	45	18	4	9	.504			
316	487	504		7773	117274	32784	81726	2764	627	127	309	185		4		3		99		99	49	20	1	11	.432			
203	503	506		12371	117923	19436	98479	8	649	73	270	192	8	106				82		82	42	11	18	7	.506			
241	505	498		10391	119861	24600	95255	5	659	67	342	238	2	11				98		98	52	10	2	16	.426			
307	490	494		8847	120955	30919	90017	19	617	98	351	114	35	9		10		93		93	57	16	7	80	.484			
316	489	502		7556	121965	44666	77232	67	620	119	332	153	9	8				97		97	53	19	3	52	.464			
224	505	489		14573	124851	15469	108644	738	583	59	302	185	14	22				94		94	52	10	6	40	.524			
241	504	500		14936	128651	22890	105754	7	619	81	249	229	4	55				90		90	40	13	10	6	.528			
320	492	487		7172	129899	52437	76787	675	633	173	295	123	15	22		4	2	94		94	47	27	6	40	.501			
309	492	494		7003	133130	60082	72981	67	557	156	214	120	51	16		1	29	84	5	88	38	28	12	77	.624			
203	501	503		11532	137134	40495	95894	745	564	156	97	118	171	22			277	44	33	66	17	28	34	89	.847			
307	490	492		10334	137256	32356	104866	34	632	82	249	161	30	6		104		94		94	39	13	6	84	.529			
224	507	489		15075	137313	17666	119484	163	647	73	265	231	57	20			186	68	22	88	41	11	12	74	.554			
224	506	488		9710	137376	15331	116411	5634	503	88	103	128	90	94			70	56	12	63	21	17	37	49	.988			
203	502	507		13290	141609	25596	116005	8	518	103	183	164	41	26		1		87		87	35	20	13	61	.721			
224	506	489		13496	141884	27018	114857	9	654	168	246	193	5	42		1		93		93	38	26	7	10	.537			
231	501	502		10381	142045	58414	82858	773	594	198	72	60	225	39			11	55	2	56	12	33	44	85	.987			
224	507	495		12737	144889	42200	101205	1484	622	129	188	211	15	79				85		85	30	21	15	16	.630			
224	506	492		13273	145957	16107	129760		636	42	361	210	7	16				96		96	57	7	4	30	.546			
241	503	499		9737	147539	78207	69055	77	627	152	112	212	2	16		134		97		97	18	24	3	12	.555			
224	502	489		12744	147750	13657	117756	16337	609	43	189	175	42	35			124	83	5	87	31	7	13	54	.639			
224	505	491		14113	148002	18940	128954	108	623	62	308	202	8	24			19	95		95	49	10	5	25	.575			
224	506	496		12947	150919	50984	99812	123	543	138	168	192	5	41				92		92	31	25	8	11	.696			
224	503	493		14472	152420	32002	118151	2267	945	57	203	193	481	9		3		48		48	21	6	52	98	.769			
224	503	490		14225	152502	20796	131661	45	622	57	327	213	18	7				96		96	53	9	4	71	.586			
241	505	498		13582	154430	24328	130035	67	691	106	287	191	8	46			54	92		92	42	15	8	15	.556			
241	503	501		14824	160331	41302	118942	87	715	126	254	188	8				140	99		99	35	18	1	100	.521			
241	505	500		13792	160736	35858	124579	299	666	107	281	218	8	53				91		91	42	16	9	13	.609			
224	507	490		15505	172382	26590	145763	29	633	68	353	199	4	9				98		98	56	11	2	31	.638			
224	506	491		14863	172494	12499	159986	9	660	46	393	210	2	8				98		98	60	7	2	22	.610			

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REPRODUCIBILITY OF THE
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TOTAL FLOOR SPACE

1970 LAND USE FILE

ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES							PERCENT OF TOTAL							OPEN REC	FAR		
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	MAT	DEV	MAT	DEV	RES	NRE			OPN	
203	502	508		17224	172540	31320	141215	4	586	100	257	213	1	15			97		97	44	17	3	9		.695	
241	506	501		15561	174036	32443	141492	101	601	83	274	208	8	28			94		94	46	14	6	22		.707	
224	507	496		15378	176060	40955	135056	49	643	89	288	232	8	25			95		95	45	14	5	25		.663	
309	497	500		10854	176105	62199	112937	969	652	161	245	152	20	27		47	93		93	38	25	7	42		.669	
224	506	490		15229	178258	24388	153836	34	614	58	350	190	8	7			97		97	57	9	3	55		.684	
309	497	499		11381	178949	60021	118506	422	613	185	228	141	18	10		30	95		95	37	30	5	64		.703	
224	505	490		18320	182078	23510	158388	180	636	65	339	208	13	10			96		96	53	10	4	55		.682	
316	490	502		6871	184463	113826	70182	455	610	267	195	112	21	11		4	90	5	95	32	44	5	65		.733	
224	506	494		16874	188698	36444	152254		660	80	327	220	2	30			95		95	50	12	5	8		.690	
231	499	507		20129	190763	41925	148549	289	482	171	119	117	27	48			75	11	85	25	36	15	36		1.075	
241	506	500		17984	190881	22288	167945	648	665	83	292	251	8	32			94		94	44	12	6	20		.701	
241	504	501		17949	201748	26282	175375	91	609	98	286	203	4	17			97		97	47	16	3	20		.789	
224	502	490		19004	203914	23519	180389	6	640	53	360	204	12	10			97		97	56	8	3	54		.758	
241	503	500		17789	207348	64776	141173	1399	789	186	225	206	13	51		107	92		92	29	24	8	20		.657	
224	505	494		15525	216094	63757	147286	51	634	155	270	187	9	13			97		97	43	24	3	39		.810	
316	486	504		9851	219632	118589	100819	224	627	241	194	174	16	3		1	95	2	97	31	38	3	83		.829	
224	505	492		18865	224553	30663	193886	4	649	78	359	200	1	12			98		98	55	12	2	4		.609	
241	505	501		24898	227966	28306	199660		581	77	307	188	1	8			98		98	53	13	2	16		.915	
224	504	493		17945	231421	20739	209054	1628	437	35	220	126	45	11			87		87	50	8	13	80		1.395	
224	504	494		23558	241257	45460	192621	3176	546	95	247	176	3	22		3	95		95	45	17	5	13		1.065	
241	507	503		20407	242425	52516	189134	775	622	122	278	180	7	33		1	94		94	45	20	6	18		.957	
241	507	500		21548	243530	20498	222931	101	664	64	340	218	7	34			94		94	51	10	6	17		.899	
203	501	506		27151	250534	56199	193527	808	619	103	168	183	152	13			73		73	27	17	27	92		1.266	
224	506	495		21529	253706	56258	195477	1971	646	95	294	214	16	28			93		93	46	15	7	36		.967	
231	499	506		23135	271789	51967	219728	94	606	85	162	160	164	34			61	9	67	27	14	33	83		1.529	
231	499	505		27272	312991	75888	233604	3499	569	82	140	179	126	40		2	66	6	71	25	14	29	75		1.782	
224	502	495		12747	347533	235862	102702	8969	589	169	120	211	59	24		5	86		86	20	29	14	71		1.577	
231	500	502		36043	405343	92407	312489	447	633	79	224	150	171	9			72		72	35	12	28	95		2.055	
231	500	501		29491	448877	85520	363357		674	54	163	118	334	4			50		50	24	8	50	99		3.072	
231	500	500		30031	548025	109874	437282	869	676	47	157	116	354	1		2	48		48	23	7	52	100		3.917	
136 75																										
241	505	503		1075	4534	1118	3378	38	79	33	16	15		13			239	20	75	82	20	42	18	4		.161
241	504	503			11400	11400			206	198		7					348	37	63	100		96				.127
309	495	493			18815	18805		10	173	135		6		22	4	5	374	27	68	85		78	15			.296
312	495	476		2233	28477	5465	22554	458	247	47	127	43	23	5		3	252	44	50	89	52	19	11	83		.297
309	495	494		13	61130	58993	130	2037	543	333	1	71		99	21	17	109	65	17	78		61	22			.332
307	494	493		661	72810	65823	6912	75	687	377	24	119	35	126		5		76		76	3	55	24	22		.318
307	492	490		1077	85614	73612	12002		641	332	38	84	112	20	51	4	50	66	7	72	6	52	28	61		.429
307	492	491		1629	85940	69253	16410	277	662	333	39	134	1	92	61	1		77		77	6	50	23			.388
224	501	493		3378	90129	62981	27124	24	444	249	61	70	38	27			46	77	9	85	14	56	15	59		.546
307	493	492		4256	91854	47232	44099	523	577	308	119	121	13	14		1		95		95	21	53	5	48		.383
224	501	494		5352	95857	51987	40166	3704	271	105	56	78	19	13			210	50	44	88	21	39	12	59		.921
241	504	498		1700	112355	100415	10346	1594	558	358	31	94	7	37		30	44	85	7	92	6	64	8	16		.502
307	490	493		6568	116944	37321	77680	1943	566	87	227	130	7	14		102		96		96	40	15	4	32		.492
231	501	498		8302	119583	57054	62044	485	306	101	37	77	6	84			377	32	55	70	12	33	30	6		1.274
224	502	496		4446	123729	51639	38093	33997	536	75	46	91	14	25		286	50	85	9	93	9	14	7	36		.571
224	502	493		8679	124830	63643	58152	3035	634	268	98	161	64	43			10	82	2	83	16	42	17	60		.543
309	497	493		10171	131720	29166	102537	17	581	134	279	121	13	14		19		95		95	28	23	5	47		.546
307	493	493		5326	133518	78178	53650	1690	557	285	125	114	15	7		11	47	89	8	96	22	51	4	70		.573
224	502	497		7034	142384	88742	53345	297	476	205	63	128	20	59			169	62	26	83	13	43	17	25		.824
307	489	493		9983	145791	44034	101660	97	693	161	322	191	13	6				97		97	47	23	3	68		.496

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				TOTAL FLOOR SPACE				1970 LAND USE FILE				PERCENT OF TOTAL												OPEN		FAR				
ST	SO	MI	OBSERVED	HSNG	FLOOR X 100				LAND IN ACRES				AREA		LAND		UPN		REC											
CTY	X	Y	DEVELOPMENT	UNITS	TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SMP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC						
224	504	489		25721	147185	22070	125110	5	575	55	294	199	14	14				95		95	51	10	5	49	.617					
307	490	491		10389	147869	40639	104454	2776	636	138	313	175	4	2		4		99		99	49	22	1	62	.539					
309	497	496		11198	156583	40705	114115	1763	547	101	254	129	23	7		33		95		95	46	19	5	78	.695					
307	491	494		10055	161605	59265	102250	90	627	153	262	91	116	5			34	77	5	81	42	24	19	96	.733					
307	491	491		11508	167718	43258	124460		590	90	331	164	2	3				99		99	56	15	1	45	.659					
309	497	494		11906	174799	55080	119406	313	590	152	277	128	10	22		1		95		95	47	26	5	30	.718					
224	502	492		5478	178491	109086	46116	23289	630	262	80	132	28	24		104	25	88	4	92	13	42	8	54	.708					
224	504	491		15553	180751	31037	149571	143	619	66	329	183	6	36				93		93	53	11	7	14	.719					
309	497	498		11585	181837	62263	118973	601	653	217	227	157	9	29		15		94		94	35	33	6	23	.678					
241	502	500		13946	182499	84523	95238	2738	612	219	191	182	4	13		4		97		97	31	36	3	22	.703					
241	502	501		19330	184926	30674	154852		653	89	283	210	46	26				89		89	43	14	11	64	.731					
224	504	490		16993	185096	32997	152084	15	626	69	349	199	2	7				99		99	56	11	1	19	.688					
224	502	498		9881	191300	108943	81950	407	643	306	126	170	19	22		29		90	4	94	20	48	6	46	.730					
309	498	496		4642	196785	135442	61300	43	648	476	60	96	3	12		1	63	89	9	98	9	73	2	19	.714					
309	497	497		14752	197859	46192	151657	10	679	137	326	171	30	15				93		93	48	20	7	67	.716					
224	504	497		13537	201326	102956	97808	562	630	270	144	176	12	29			9	92	1	94	23	43	6	29	.783					
224	503	491		19751	204027	37276	166713	38	600	74	316	187	2	21				96		96	53	12	4	7	.812					
224	505	493		21425	204631	36615	167707	309	761	86	288	216	9	11		151		97		97	38	11	3	46	.633					
224	504	492		20066	206986	33598	173384	4	608	68	320	210	2	7				98		98	53	11	2	26	.794					
203	501	507		22251	211098	49254	161419	425	766	115	174	186	277	14				62		62	23	15	38	95	1.022					
224	505	495		22412	217187	38635	178093	459	625	86	281	204	38	16				91		91	45	14	9	70	.873					
231	499	497		9844	217206	149870	67059	277	277	154	45	73	2	3			289	48	51	98	16	55	2	46	1.830					
307	492	492		9334	220193	121476	97742	975	649	264	162	170	9	43		1		92		92	25	41	8	17	.847					
224	501	495		12759	221914	152228	69457	229	449	147	67	120	37	78			163	55	27	74	15	33	26	32	1.523					
241	502	499		1971	222605	208593	14002	10	685	370	24	210	3	77			16	86	2	88	4	54	12	4	.845					
203	502	506		24611	224192	32400	191788	4	684	136	233	237	17	62				89		89	34	20	11	21	.850					
224	502	491		14439	224408	56675	124629	43104	612	125	213	195	12	26		42		94		94	35	20	6	31	.897					
307	491	493		7818	226462	117900	107260	1302	644	234	187	161	39	19		4	3	90	1	91	29	36	9	67	.887					
224	504	496		19705	229104	57882	168717	2505	639	101	304	207	11	13		3		96		96	48	16	4	47	.855					
224	503	497		20303	229914	65978	163360	576	674	160	231	241	20	23				94		94	34	24	6	47	.835					
224	502	494		18144	239585	84161	153650	1774	645	178	232	187	15	33				93		93	36	28	7	31	.921					
309	498	497		11810	243453	123571	119735	147	629	343	123	141	18	4		1	14	94	2	97	19	54	3	84	.920					
203	500	508		23861	243516	36379	203008	4129	687	243	195	188	7	50		6		92		92	28	35	8	12	.886					
307	491	492		13187	245666	74985	170500	181	627	174	259	162	1	31				95		95	41	28	5	5	.948					
224	503	496		17642	246751	121024	124104	1623	621	185	177	221	13	23		3		94		94	29	30	6	36	.967					
224	505	497		24929	248991	40123	208664	204	610	92	305	197	6	10				97		97	50	15	3	36	.961					
203	502	505		21737	253762	73294	180033	435	654	161	143	184	84	82			9	74	1	75	22	25	25	50	1.194					
224	505	496		22540	254689	47467	207074	148	683	84	362	223	6	8				98		98	53	12	2	43	.874					
203	500	504		22917	256984	75562	176800	4622	603	174	113	171	60	83		2	35	72	5	76	19	29	24	42	1.283					
224	503	494		21293	261753	51310	210385	58	557	66	248	159	81	4				85		85	45	12	15	96	1.271					
224	503	495		20987	265296	89056	175398	842	645	156	247	211	4	27		1		95		95	38	24	5	13	.992					
231	501	501		26855	276043	46678	229739	226	364	66	132	84	24	59			504	32	58	77	36	18	23	29	2.258					
309	497	495		15467	276631	113751	159992	2888	643	224	244	134	11	23		8		95		95	38	35	5	33	1.042					
231	501	499		23784	284565	105594	177926	1045	379	164	71	104	5	35			169	62	31	90	19	43	10	12	1.925					
224	504	495		26374	286550	66115	218592	1843	666	106	316	219	13	10		2		97		97	47	16	3	56	1.023					
307	492	493		1801	292768	271646	19531	1591	595	384	42	128	7	11		24	58	88	9	97	7	65	3	41	1.165					
309	498	495		11568	299963	177845	121250	868	700	353	130	179	17	20				95		95	19	50	5	46	1.039					
203	501	504		28353	311362	95492	215841	29	594	147	206	175	43	22				89		89	35	25	11	66	1.355					
203	500	507		29564	315744	51875	263804	65	577	122	228	194	23	10				94		94	39	21	6	69	1.332					
231	499	503		22322	320597	145137	175360	50	475	130	128	131	77	10			20	78	4	82	27	27	18	89	1.895					
231	499	504		26781	327053	36903	274715	15435	474	50	169	144	90	14		7	51	70	10	78	36	11	22	87	2.033					
231	501	496		26565	348206	141988	205940	278	502	144	155	165	31	7			82	79	14	92	31	29	8	82	1.723					

INTENSIVELY DEVELOPED

OBSERVED DEVELOPMENT

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			TOTAL FLOOR SPACE				1970 LAND USE FILE												PAGE 14													
ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES												PERCENT OF TOTAL											
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SHP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC	FAR							
203	500	505	OBSERVED DEVELOPMENT INTENSIVELY DEVELOPED	33666	357373	56504	300362	507	615	109	228	194	53	30				86		86	37	18	14	64	1.545							
231	499	502		35736	367497	96517	270900	80	447	82	137	133	93	1			8	77	2	79	31	18	21	99	2.393							
203	500	506		38614	372733	53982	318703	48	689	130	259	229	49	23				90		90	38	19	10	68	1.386							
231	501	500		25806	393456	150198	242501	757	476	233	101	97	23	23			87	77	15	90	21	49	10	51	2.096							
231	499	498		14224	405403	317745	87080	578	531	301	70	129	3	28			3	94	1	94	13	57	6	9	1.861							
231	499	499		21885	406799	268189	136242	2368	547	314	80	130	2	20		1		96		96	15	57	4	8	1.779							
231	500	503		32955	411125	128390	282485	250	679	145	226	194	32	82			16	81	2	83	33	21	17	28	1.670							
231	501	497		47756	433785	92612	340752	421	580	90	269	151	55	14			80	77	12	88	46	15	12	79	1.952							
203	501	505		29294	461012	85425	370848	4739	643	159	254	200	7	22		1		96		96	39	25	4	24	1.722							
231	499	500		39699	491284	133065	358045	174	544	216	149	116	23	39				89		89	27	40	11	37	2.342							
231	499	501		43725	500373	61713	438293	367	462	47	194	142	57	23			1	83		83	42	16	17	71	2.998							
231	500	496		12262	686057	606229	74626	5202	588	295	53	209	6	25				95		95	9	50	5	20	2.829							
231	500	495		396	722041	709209	11784	1048	427	227	7	108	25	49			10 313	48	42	83	2	53	17	33	4.703							
231	500	497		47845	812890	503504	364520	4866	639	203	190	216	17	11		2		96		96	30	32	4	59	3.282							
231	500	498		32158	1325419	1125541	194322	5556	631	302	90	217	8	11		3		97		97	14	48	3	44	4.969							
231	500	499		21340	1561795	1420555	140375	825	613	319	58	218	6	12				97		97	9	52	3	33	6.018							

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REPORT QUALITY OF ORIGINAL PAGE IS POOR

EXHIBIT 4

TOTAL FLOOR SPACE

1970 LAND USE FILE

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			TOTAL FLOOR SPACE				1970 LAND USE FILE										PAGE 13									
ST CTY	SQ X	MI Y	OBSERVED DEVELOPMENT	HSNG UNITS	FLOOR X 100				LAND IN ACRES						PERCENT OF TOTAL										FAR	
					TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN	REC		
224	564	489		15721	147185	22070	125110	5	575	55	294	199	14	14			95		95	51	10	5	49	.617		
307	490	491		10389	147869	40639	104454	2776	636	138	313	175	4	2		4	99		99	49	22	1	62	.539		
309	497	496		11198	156583	40705	114115	1763	547	101	254	129	23	7		33	95		95	46	19	5	78	.695		
307	491	494		10655	161605	59265	102250	90	627	153	262	91	116	5			77	5	81	42	24	19	96	.733		
307	491	491		11508	167718	43258	124460		590	90	331	164	2	3			99		99	56	15	1	45	.659		
309	497	494		11906	174799	55080	119406	313	590	152	277	128	10	22		1	95		95	47	26	5	30	.718		
224	502	492		5478	178491	109086	46116	23289	630	262	80	132	28	24		104	88	4	92	13	42	8	54	.708		
224	504	491		15553	180751	31037	149571	143	619	66	329	183	6	36			93		93	53	11	7	14	.719		
309	497	498		11585	181837	62263	118973	601	653	217	227	157	9	29		15	94		94	35	33	6	23	.678		
241	502	500		13946	182499	84523	95238	2738	612	219	191	182	4	13		4	97		97	31	36	3	22	.703		
241	502	501		19330	184926	30674	154852		653	89	283	210	46	26			89		89	43	14	11	64	.731		
224	504	490		16993	185096	32997	152084	15	626	69	349	199	2	7			99		99	56	11	1	19	.688		
224	502	498		9881	191300	108943	81950	407	643	306	126	170	19	22			90	4	94	20	48	6	46	.730		
309	498	496		4642	196785	135442	61300	43	648	476	60	96	3	12		1	89	9	98	9	73	2	19	.714		
309	497	497		14752	197859	46192	151657	10	679	137	326	171	30	15			93		93	48	20	7	67	.716		
224	504	497		13537	201326	102956	97808	562	630	270	144	176	12	29			92	1	94	23	43	6	29	.783		
224	503	491		19751	204027	37276	166713	38	600	74	316	187	2	21			96		96	53	12	4	7	.812		
224	505	493		21425	204631	36615	167707	309	761	86	288	216	9	11		151	97		97	38	11	3	46	.633		
224	504	492		20066	206986	33598	173384	4	608	68	320	210	2	7			98		98	53	11	2	26	.794		
203	501	507		22251	211098	49254	161419	425	766	115	174	186	277	14			62		62	23	15	38	95	1.022		
224	505	495		22412	217187	38635	178093	459	625	86	281	204	38	16			91		91	45	14	9	70	.873		
231	499	497		9844	217206	149870	67059	277	277	154	45	73	2	3			48	51	98	16	55	2	46	1.830		
307	492	492		9334	220193	121476	97742	975	649	264	162	170	9	43		1	92		92	25	41	8	17	.847		
224	501	495		12759	221914	152228	69457	229	449	147	67	120	37	78			55	27	74	15	33	26	32	1.523		
241	502	499		1971	222605	208593	14002	10	685	370	24	210	3	77			86	2	88	4	54	12	4	.845		
203	502	506		24611	224192	32400	191788	4	684	136	233	237	17	62			89		89	34	20	11	21	.850		
224	502	491		14439	224408	56675	124629	43104	612	125	213	195	12	26		42	94		94	35	20	6	31	.897		
307	491	493		7818	226462	117900	107260	1302	644	234	187	161	39	19		4	90	1	91	29	36	9	67	.887		
224	504	496		19705	229104	57882	168717	2505	639	101	304	207	11	13		3	96		96	48	16	4	47	.855		
224	503	497		20303	229914	65978	163365	576	674	160	231	241	20	23			94		94	34	24	6	47	.835		
224	502	494		18144	239585	84161	153650	1774	645	178	232	187	15	33			93		93	36	28	7	31	.921		
309	498	497		11810	243453	123571	119735	147	629	343	123	141	18	4		1	94	2	97	19	54	3	84	.920		
203	500	508		23861	243516	36379	203008	4129	687	243	195	188	7	50		6	92		92	28	35	8	12	.886		
307	491	492		13187	245666	74985	170500	181	627	174	259	162	1	31			95		95	41	28	5	5	.948		
224	503	496		17642	246751	121024	124104	1623	621	185	177	221	13	23		3	94		94	29	30	6	36	.967		
224	505	497		24929	248991	40123	208664	204	610	92	305	197	6	10			97		97	50	15	3	36	.961		
203	502	505		21737	253762	73294	180033	435	654	161	143	184	84	82			74	1	75	22	25	25	50	1.194		
224	505	496		22540	254689	47467	207074	148	683	84	362	223	6	8			98		98	53	12	2	43	.874		
203	500	504		22917	256984	75562	216800	4622	603	174	113	171	60	83		2	72	5	76	19	29	24	42	1.283		
224	503	494		21293	261753	51310	210385	58	557	66	248	159	81	4			85		85	45	12	15	96	1.271		
224	503	495		20987	265296	89056	175398	842	645	156	247	211	4	27		1	95		95	38	24	5	13	.992		
231	501	501		26855	276043	46078	229739	226	364	66	132	84	24	59			32	58	77	36	18	23	29	2.258		
309	497	495		15467	276631	113751	159992	2888	643	224	244	134	11	23		8	95		95	38	35	5	33	1.042		
231	501	499		23784	284565	105594	177926	1045	379	164	71	104	5	35			62	31	90	19	43	10	12	1.925		
224	504	495		26374	286550	66115	218592	1843	666	106	316	219	13	10		2	97		97	47	16	3	56	1.023		
307	492	493		1801	292768	271646	19531	1591	595	384	42	128	7	11		24	88	9	97	7	65	3	41	1.165		
309	498	495		11568	299963	177845	121250	868	700	353	130	179	17	20			95		95	19	50	5	46	1.039		
203	501	504		28353	311362	95492	215841	29	594	147	206	175	43	22			89		89	35	25	11	66	1.355		
203	500	507		29564	315744	51875	263804	65	577	122	228	194	23	10			94		94	39	21	6	69	1.332		
231	499	503		22322	320597	145187	175360	50	475	130	128	131	77	10			78		78	4	82	27	18	89	1.895	
231	499	504		26781	327053	36903	274715	15435	474	50	169	144	90	14			7	51	10	78	36	11	22	87	2.033	
231	501	496		26565	348206	141988	205940	278	502	144	155	165	31	7			82		79	14	92	31	29	8	1.723	

INTENSIVELY DEVELOPED

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			OBSERVED DEVELOPMENT	TOTAL FLOOR SPACE				1970 LAND USE FILE												PAGE 14							
ST CTY	SO X	MI Y	HSNG UNITS	FLOOR X 100				LAND IN ACRES								PERCENT OF TOTAL								OPEN REC	FAR		
				TOTAL	NRS	RES	SPEC	TTL	NRS	RES	ST	REC	VAC	SWP	SPC	WAT	DEV	WAT	DEV	RES	NRE	OPN					
203	500	505	33666	357373	56504	300362	507	615	109	228	194	53	30				86	86	37	18	14	64	1.545				
231	499	502	35736	367497	96517	270900	80	447	82	137	133	93	1		8		77	2	79	31	18	21	99	2.393			
203	500	506	38614	372733	53982	318703	48	689	130	259	229	49	23				90		90	38	19	10	68	1.386			
231	501	500	25806	393456	150198	242501	757	476	233	101	97	23	23			87	77	15	90	21	49	10	51	2.096			
231	499	498	14224	405403	317745	87080	578	531	301	70	129	3	28		3		94	1	94	13	57	6	9	1.861			
231	499	499	21885	406799	268189	136242	2368	547	314	80	130	2	20		1		96		96	15	57	4	8	1.779			
231	500	503	32955	411125	128390	282485	250	679	145	226	194	32	82			16	81	2	83	33	21	17	28	1.670			
231	501	497	47756	433785	92612	340752	421	580	90	269	151	55	14			80	77	12	88	46	15	12	79	1.952			
203	501	505	29294	461012	85425	370848	4739	643	159	254	200	7	22		1		96		96	39	25	4	24	1.722			
231	499	500	39699	491284	133065	358045	174	544	216	149	116	23	39				89		89	27	40	11	37	2.342			
231	499	501	43725	500373	61713	438293	367	462	47	194	142	57	23			1	83		83	42	10	17	71	2.998			
231	500	496	12262	686057	606229	74626	5202	588	295	53	209	6	25				95		95	9	50	5	20	2.829			
231	500	495	396	722041	709219	11784	1048	427	227	7	108	25	49		10	313	48	42	83	2	53	17	33	4.703			
231	500	497	47845	872890	503504	364520	4866	639	203	190	216	17	11		2		96		96	30	32	4	59	3.282			
231	500	498	32158	1325419	1125541	194322	5556	631	302	90	217	8	11		3		97		97	14	48	3	44	4.969			
231	500	499	21340	1561755	1420555	140375	825	613	319	58	218	6	12				97		97	9	52	3	33	6.018			

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REPRODUCIBILITY OF THE
ORIGINAL PAGE IS POOR

